JOINT STUDY PROGRAMME
UNIVERSITY OF SPLIT
CROATIAN DEFENCE ACADEMY
FACULTY OF MARITIME STUDIES
FACULTY OF HUMANITIES AND SOCIAL SCIENCES

DETAILED PROPOSAL OF THE STUDY PROGRAMME

INTEGRATED UNDERGRADUATE AND GRADUATE UNIVERSITY STUDY PROGRAMME IN

NAVAL STUDIES

Courses: Naval Nautical Studies and Naval Marine Engineering

SPLIT, 2020.

1 GENERAL INFORMATION ON THE UNIVERSITY

Name:	University of Split
Address:	Poljička cesta 35, 21000 Split
Phone:	+385 (0)21 558 212
Fax:	+385 (0)21 348 163
E-mail:	Rektorat.office@unist.hr
Website:	http://www.unist.hr

2 GENERAL INFORMATION ON THE STUDY PROGRAMME

Name of the study programme	Integrated undergraduate and graduate university studyprogramme in *Naval Studies* (*Naval Nautical Studies and NavalMarine Engineering*)		
Provider(s) of the study programme	University of Split		
Co-bearerof the study programme	Croatian Defence Academy, Faculty of Maritime Studies, Faculty of Humanities and Social Sciences		
Type of the study programme	Vocational study programme ☐	University study programme ☒	
Level of the study programme	Undergraduate ☐	Graduate ☐	Integrated ☒
	Postgraduate University ☐	Postgraduate specialist ☐	Graduate specialist ☐
Academic/vocational title earned at the completion of the study	**Master of Naval Nautical Studies / Master of Naval Marine Engineering**		

3 INTRODUCTION

3.1 Assessment of the validity of conducting the studies

The reasons for launching this study programme are based on expressed interest and requirements of the Ministry of Defence and the Croatian Armed Forces. In conformity with Article 48 paragraph 6 of the *Act on Scientific Work and Higher Education*, the University and the Government of the Republic of Croatia can make a special agreement to establish special study programmes in order to meet the requirements of the military and police training and education within the University. The Naval Studies programme has been developed in cooperation with the Croatian Defence Academy and the University of Split with its constituents. The study programme is established by the *Government Decision* and the signed *Agreement between the Government and the University of Split*. The Agreement assumes the study programme will be performed in the English language.

Regarding the fact that in addition to the Croatian Navy, other participants in protection of the Adriatic Sea are the Ministry of the Sea, Transport and Infrastructure, Ministry of the Interior and other competent government agencies and institutions, it is possible to carry out integrated education of future naval officers for meeting the requirements of the government institutions in such an integrated graduate study programme.

3.2 Connection with local community (economy, free enterprise, civil society)

The integrated undergraduate and graduate university study programme in *Naval Studies* is closely connected with contemporary scientific knowledge in the scientific field of technical and military sciences. Especially in the fiel of maritime affairs and interdisciplinary fields, the field of military-defense and security-intelligence science. The study finds application in all branches of the economy related to maritime affairs and various fields of science, and at the same time forms the basis for successful interaction between economy and the competent social and state structures.

3.3 Conformity with requirements of the profession

The greater part of this integrated university study programme is comprised in the study programme of the Nautical Studies and Marine Engineering and it fully meets the requirements set out by the Ministry of Defence, i.e. the Croatian Navy which the cadres will be trained and educated for.
The programme is entirely in accordance with the *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers* (STCW Convention), and with the Croatian *Code of Qualifications and Seafarers' Certificates of Qualification* setting minimum requirements for obtaining qualification of the First Officer of the deck and Master on the ship of 3.000 GT or bigger (STCW II/2) or the Second Officer and Chief Engineer

on the ship with engine of propulsion horsepower of 3000 kw or more (STCWIII/2). The study programmes have been developed in accordance with the *International Maritime Organization* recommendations (IMO Model Course 7.01 and 7.02).
Besides, other constituents of the University of Split involved in this study programme provide special knowledge and expertise through courses in order to meet learning outcomes of the curriculum.
The study program is developed to meet educational requirements of future members of the armed forces but also it is accredited in conformity with the Bologna Declaration goals in a manner that they are in the system of ECTS credits, i.e. in the European Higher Education Area and have been conforming to Erasmus programme with regard to exchange of cadets, junior officers, assistants and professors.

3.4 Partners beyond the system of higher education

Significant partners are the Ministry of the Interior, Ministry of the Sea, Transport and Infrastructure, Ministry of Defence and other government directorates. In addition to companies and institutions within maritime industry such as e.g. Plovput, Jadrolinija (in connection with operations at sea), there are also land-based companies within maritime industry (shipyards, technical overhaul institutes, electronic centers, institutes and industrial construction design offices) which are learning base for the students.

3.5 The manner of funding

The funding of the study programmes is regulated by the *Government Decision*, rights and obligations of the Croatian Ministry of Defence and the University of Split ensuing from their *Agreement on Establishment of Special University Study Programme,* as well as individual *Contracts* between the Croatian Ministry of Defence and the University of Split.

3.6 Comparability of the study programme with programmes of the accredited institutions of higher education in Croatia and the European Union.

This is a study programme which has not existed in this way in the Republic of Croatia. It includes all necessary general, military and maritime knowledge and skills, and it is hardly comparable to any other study programme in the European Union. However, the parts of the study programme are comparable to other study programmes in the Republic of Croatia and the European Union Member States.
During development of the study programme, the alignment of its curriculum with the curriculums of other respectable foreign colleges was particularly taken into account in order to make the programmes mutually comparable. Comparable study programmes of the European Union are listed in the material entitled „*Europe for the Future Officer, Officer for the Future Europe – Compendium of the Europe Military OfficerBasicEducation*, http://www.miles.ac.at/iep/pdf/2011%2010%20Paile%20Compendium.pdf" issued by the Ministry of Defence of the Republic of Poland during chairmanship of Poland over the

European Union. It should be emphasized that the system of education for maritime experts in the world is very diverse and there are no two countries with an equal educational system. This refers to almost all components of the education: enrolment requirements, aim and purpose of education, type and organization of the study, duration of the study, names of higher education institutions, etc.

The integrated undergraduate and graduate university study programme in *Naval Studies* enables students to gain knowledge, skills and competencies in conformity with international norms and NATO standards, in a foreign language as well. For the most part it is aligned with similar study programmes run at Faculties of Maritime Studies in Split and Rijeka and Maritime Department of the University of Dubrovnik. In addition to horizontal mobility within the Republic of Croatia similar study programmes have been developed in other EU institutions that provide education to seafarers and a high degree of comparability of the study programmes has been established. Co-operation with these institutions will provide guarantee for realization of the Bologna Declaration goals (compatibility of study programmes and mobility of teachers and students).

3.7 Openness of the study towards mobility of students (horizontal, vertical in the Republic of Croatia and international)

The integrated undergraduate and graduate university study programme in Naval Studies enables students to gain knowledge, skills and competencies in conformity with international norms and NATO standards, in a foreign language as well.

Considering the specific nature of the programme, the mobility is possible only within the similar Military study programmes of the University of Zagreb.The international mobility of students is possible through bilateral agreements made between the Croatian Ministry of Defence and partner countries.

3.8 Conformity with the mission and strategy of the University and proponents as well as with the strategic document of the network of institutions of higher education.

The study programme has been aligned with the mission of the University of Split, and with the *Annual Report on the State of Readiness of the Defence System* for the year 2012 adopted by the Croatian Parliament, i.e. the adopted direction of development in the forthcoming period where the necessity of launching an undergraduate and graduate university study programme as an integrated model of the civil-military education to meet the Croatian Armed Forces requirements was determined. The study programme is in line with item 3.1 of the *Guidelines and Criteria for Establishing New StudyProgrammes* at existing institutions of higher education, strategic document of the network of higher education institutions, enacted in 2011 by the National Council for Higher Education.

3.9 Experiences to date in implementation of equivalent or similar programmes

So far the University of Split has not conducted such a programme but each of its Constituents has a long time experience in conducting the study programmes in their specific field. Moreover, the Croatian Defence Academy has been conducting programmes in military education for many years.

The University of Split, together with its Constituents and the Croatian Defence Academy, each in its area, meet all the requirements to establish and perform such a study programme.

4 DESCRIPTION OF THE STUDY PROGRAMME

4.1 General

Scientific/artistic area of the study programme	Technical sciences, Traffic and transport technology, Maritime and river traffic and interdisciplinary scientific fields, Sciences and skills of military defence and security and intelligence
Duration of the study programme	5 academic years
Minimum ECTS credits required for completing the study	300
Course enrolment requirements and entry competences required for the course	1.Completed 4-year secondary education 2. Passed the State Matura exam 3. Meeting the requirements for entering the officer cadet service in line with provisions of the Act on Service in the Armed Forces of the Republic of Croatia 4. Completed basic military training after the enrolment, and before the beginning of the first semester.

4.2 Learning outcomes of the study programme

1. To know and to understand expert and scientific principles and procedures important for the process of ship exploitation: navigation, manoeuvring, maintenance, cargo handling maritime profession, as well as maritime skills indispensable to an officer and other specific procedures regulated by the STCW Convention.
2. To identify, formulate and solve complex navigation problems through selection of appropriate methods and procedures and to apply up-to-date knowledgeand technologies used in maritime traffic and navigation practice.
3. Correct use and interpreting of all language structures and specialised terminology in maritime and military environment.
4. To develop intellectual capabilities of critical thinking and creativity in analysing, interpreting and evaluation of the information necessary in decision making process on board a ship, and on board a naval ship in particular.
5. To organise and maintain ship's safety (particularly of the naval ship), crew and carry out life saving measures, fire-fighting and water penetration preventive systems and to plan and manage emergency situations and in case of damage (Shipboard Damage Control).

6. To apply general characteristics of the ship measurement and to differentiate construction and technological characteristics of various types of ships (particularly of the naval ships). Application and possibility of using ship's blueprints and charts.
7. To plan and supervise the operation of electric and electronic devices for management and supervision, and to identify and remove causes of their irregular operation.
8. To differentiate general characteristics of the ship's stability in undamaged and damaged condition, to have knowledge of the static and dynamic ship's stability.
9. To differentiate technical characteristics of the propulsion systems, basic technical notions, performance of the propulsion systems and their features, basic constructions of the ship's propulsion machines and other elements of the propulsion system.
10. To apply principles of organizing operation and management on a ship, and particularly on a naval ship.
11. Systematic approach to organization and management on a ship, individually or in a team, or solving organizational problems in complex conditions, through systematic approach to organization and management on a ship and on a naval ship in particular.
12. To recognize a legal problem, to qualify it correctly and to organize further procedures in conformity with prescribed procedures.
13. To interpret and critically judge elements of maritime-legal regulations and to organize further proceedings in conformity with prescribed procedures.
14. To plan and apply workplace safety measures.
15. To be included in time in life-long education system depending on changing technical requirements of the working environment.
16. To plan measures of safety at sea, maritime security, protection of the rights and interests of the Republic of Croatia at sea and protection of the sea and marine environment through the use of the international and national legal regulations.

4.2.1 Learning outcomes – the course in NAVAL NAUTICAL STUDIES

1. To plan a vessel’s voyage through analysis and use of navigational charts and manuals, meteorological reports, navigation notifications and warnings and to apply methods of optimizing maritime voyages.
2. To plot the position and to safely lead a ship in all conditions using navigation instruments and aids, modern electronic navigation devices and systems and elements of the dead reckoning and tactical navigation.
3. To recognize and remove errors of the navigation instruments and devices, to analyse errors and reliability of the navigation and other ship's systems and to act correctly in case of their failure.
4. To undertake search and rescue action in a correct manner, independently or in coordination with others; to use rescue equipment correctly, to apply techniques of survival at sea, to administer first aid, medical care, etc.
5. To keep safe navigational watch, to use navigation, meteorological, communication and other equipment on the bridge; to define appropriate procedures and the surveillance system for their implementation.
6. To interpret weather forecasts, to use meteorological instruments on one's own and to assess hydro-meteorological conditions.
7. To assess perils in a timely manner, especially the elements of perils for security and security protection, to maintain them at appropriate level, to act correctly in crisis situations and to develop procedures for operation in crisis situations.
8. To steer and manoeuvre a ship in all conditions, to react appropriately in case of emergency during navigation and combat engagement of the ship and ship’s weapon

systems, to avoid collisions and other perils at sea, to use ship's communication systems and to gain knowledge of the communication protocols in regular and emergency circumstances.
9. To analyse and to assess important elements of the ship's stability,strain and stresses of the ship's construction; to organize procedures for maintenance of the ship and ship's systems.
10. To have knowledge of standard maritime skills, organization of work on a ship (particularly naval), ship terminology and practice, and to use maritime and naval English language terminology in all conditions.
11. To manage and to command a ship's crew and to evaluate correctly presumptions, data, arguments and various opinions and to make responsible decisions quickly in various situations.
12. To critically assess the use of ship's and outboard navigational aids.
13. To analyse and interpret the systems of directing navigation and the system of navigation oversight;
14. To manage risks in maritime affairs.
15. To operate and manage ship's weapon systems, to organize procedures of their maintenance.
16. To interpret and critically assess elements of the maritime-legal regulations related to protection of life at sea, protection of the rights and interests of the Republic of Croatia at sea, protection of the sea and sea environment and international maritime war and humanitarian law.
17. To use professionally ship's combat and non-combat systems on a naval ship.
18. To use knowledge from maritime and naval history in solving tactical and operational problems.

4.2.2 Learning outcomes -the course in NAVAL MARINE ENGINEERING

1. To supervise, maintain and efficiently manage a ship's propulsion system (ship's diesel engines, ship's steam and gas turbines and ship's steam boilers).
2. To plan and assign proceduresfor work, to supervise, to evaluate the level of success and to maintain safety of the propulsion machine and auxiliary machines.
3. To manage the operation of the ship's engine systems and the system of ballast waters and to discover and remove consequences of their malfunction.
4. To set up and maintain ship's safety, crew's safety and to implement measures for life-saving, fire-fighting and preventing of water penetration systems, and to plan and manage situations in emergency and in case of damage (Shipboard Damage Control).
5. To plan and organize operation of the electric-power devices and systems of automated management and control and to discover and remove consequences of their irregular operation.
6. To plan and organize operation of the electric and electronic devices for management and control, and to discover and remove causes of their irregular operation.
7. To plan and apply workplace safety measures.
8. To lead and manage ship's engine-room department crew.
9. To identify, analyse, model and solve naval marine engineering problems by connection of basic knowledge from the area of natural and technical sciences.
10. To use complex methods by connecting engineering knowledge and skills in military – engineering practice.

11. To integrate and to apply engineering principles and techniques in the process of military system operation in unforeseen conditions.
12. To handle and to manage maintenance of military combat and non-combat assets
13. To professionally use military combat and non-combat assets of the branch/service
14. To recommend processes of safe and efficient maintenance and repairing breakdowns of the ship's systems.
15. To interpret and critically assesselements of the maritime-legal regulations related to protection of life at sea, protection of the rights and interests of the Republic of Croatia at sea, protection of the sea and sea environment, and International Naval WarfareLaw and Humanitarian Law.
16. Performing logistics and procurement tasks under the NATO procedures

4.3 The possibility of employment

In the Ministry of Defence and the Croatian Armed Forces, Ministry of the Interior, in the state administration system, state agencies and similar.

4.4 The possibility to continue studying at higher level

There is a possibility to continue studying at postgraduate specialized and postgraduate doctoral study programmes.

4.5 The study programme/and lower levels of proponents or other institutions in the Republic of Croatia from which it is possible to enrol in the proposed study

The integrated undergraduate and graduate university study programme in *Naval Studies* may be enrolled by a person who completed secondary school in duration of four (4) years, passed the State Matura exam and who meets the requirements for admittance in cadet service in conformity with provisions of the Act on Service in the Croatian Armed Forces (meeting health, psychological, physical and security requirements).

4.6 The conditions and manner of studying

The integrated undergraduate and graduate university study programme in *Naval Studies* is organized in duration of five academic years, through 10 semesters in which a student earns a total of 300 ECTS. There are two courses within this study; the course in Naval Nautical Studies and the course in Naval Marine Engineering. There are elective courses of the study programme attended by students who receive education for the needs of the Ministry of the Interior.

The conditions of enrolment in the following semester, or the next year are defined in conformity with the *Regulations on studies and study system at the University of Split* and the *Book of Rules on Studying at the Faculty of Maritime Studies in Split*.

This study programme will be conducted in the premises of the Croatian Defence Academy (CDA) in Split, located on the navy base "*Admiral flote Sveto Letica – Barba*" and in other teaching and training facilities of the Croatian Armed Forces (CAF), except for the contents that require specialized laboratories i.e. teaching equipment of particular faculties.

4.7 Guidance and Counselling System during the study

The Croatian Defence Academy teachers will monitor the students' work through academic and military-training part. In order to meet the required criteria and to achieve great results, students will be steered in the desired direction through official conversations and teachers' guidelines. The purpose of official conversations, guidance and counselling of students is to achieve an increased productivity, better time management and, eventually, better results. On the basis of academic results from training activities, each student will obtain an annual descriptive grade.

4.8 Criteria and conditions for transferring ECTS credits

Transferring of ECTS points may be carried out between different studies. Criteria and conditions for transferring ECTS points shall be prescribed by the *Regulations on studies and study system at the University of Split* and the *Book of Rules on studying at the Faculty of Maritime Studies*.

4.9 Completion of the study

Method of completing the study	Final thesis ☐ Graduation thesis ☒	Final exam ☐ Graduation exam ☐
Conditions for registering for the final/graduation thesis and/or final/graduation exam	Students are entitled to register if they have passed all the courses envisaged by the study curriculum.	
Procedure of evaluating the final/graduation exam and evaluating and defending the final/graduation exam	In line with the Ordinance on Final and Graduation Theses and the Graduation Thesis Defence Protocol.	

4.10 List of mandatory and elective courses

4.10.1 1st Year, I Semester

LIST OF COURSES							
Year of study: **I.**							
Semester: **I.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**EX**	**FW**	
Mandatory (joint)	VPO101	Maritime English I	30	0	30	0	4
	VPO102	Mathematics I	30	0	30	0	5
	VPO103	Applied Computer Science	30	0	30	0	4
	VPO104	Maritime Law	45	0	0	0	3
	VPO105	Academic Writing	15	5	10	0	3
	VPN101	Seamanship I	45	0	55	5	5
	VPO141	Military Leadership	45	0	15	0	5
	VPO119	Military Training I	0	0	0	30	2
	VPO106	Physical Education	0	0	30	0	0
TOTAL			**240**	**5**	**200**	**35**	**31**

4.10.2 1st Year, II Semester

LIST OF COURSES							
Year of study: **I.**							
Semester: **II.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**EX**	**FW**	
Mandatory (joint)	VPO107	Maritime English II	30	0	15	0	4
	VPO108	Mathematics II	30	0	30	0	5
	VPN102	Safety at Sea	45	0	3	12	5
	VPN103	Sea and Marine Environment Protection	30	0	0	0	2
	VPN104	Seamanship II	45	0	45	0	4
	VPE101	Marine Electrical Engineering and Electronics I	30	0	15	0	4
	VPO143	Military Management	45	0	30	0	4
	VPN105	On-board Training I	0	0	0	30	2
	VPO109	Physical Education	0	0	30	0	0
TOTAL			**255**	**0**	**180**	**42**	**30**

4.10.3 2nd Year, III Semester

LIST OF COURSES							
Year of study: **II.**							
Semester: **III.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory **(joint)**	VPO110	Naval English I	30	0	15	0	4
	VPS101	Technical Mechanics I	30	0	15	0	4
	VPN106	Elements of Maritime Transport I	30	0	30	0	5
	VPN107	Seamanship III	45	0	45	0	4
	VPN108	Maritime Medicine	30	0	15	0	3
	VPN109	Military-Maritime Geography	45	0	15	0	5
	VPO111	Military History	20	0	10	0	3
	VPO112	Hydroacoustics and Ship Physical Fields	30	0	15	0	3
	VPO113	Physical Education	0	0	30	0	0
TOTAL			**260**	**0**	**190**	**0**	**31**

4.10.4 2nd Year, IV Semester

LIST OF COURSES							
Year of study: **II**							
Semester: **IV**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory	VPO114	Naval English II	30	0	15	0	4
	VPS102	Engineering Mechanics II	30	0	15	0	4
	VPN110	Elements of Maritime Transport II	30	0	30	0	5
	VPN111	Work Organisation and Management On Board	30	0	15	0	4
	VPS103	Marine Power Systems	45	0	15	0	4
	VPE102	Marine Electrical Engineering and Electronics II	45	0	15	0	5
	VPS104	Graphic Drawing in Marine Engineering	15	0	30	0	3
	VPN112	On-board Training II	0	0	0	30	2
	VPO115	Physical Education	0	0	30	0	0
TOTAL			**225**	**0**	**165**	**30**	**31**

4.10.5 3rd Year, V Semester

LIST OF COURSES							
Year of study: **III.**							
Semester: **V.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatoryjoint	VPO116	Mathematics III	30	0	15	0	4
	VPO117	Military Psychology	30	0	15	0	3
	VPO118	Military Pedagogy	30	5	10	0	3
	VPO142	Military Training II	0	0	0	30	2
	VPO120	Physical Education	0	0	30	0	0
TOTAL			**90**	**5**	**70**	**30**	**12**
Mandatory Naval Nautical Studies	VPN113	Maritime Meteorology and Oceanology	45	0	15	0	4
	VPN114	Terrestrial Navigation	45	0	45	0	6
	VPN115	CargoHandlingI	30	0	30	0	5
	VPN116	Maritime Communications	30	0	45	0	4
TOTAL			**150**	**0**	**135**	**0**	**19**
Mandatory Naval Marine Engineering	VPS105	Technology of Materials	30	0	30	0	4
	VPS106	Thermodynamics and Heat Transfer	60	0	30	0	7
	VPS107	Strength of Materials	30	0	15	0	4
	VPE103	Onboard Electric Power System	45	0	30	0	4
TOTAL			**165**	**0**	**105**	**0**	**19**

4.10.6 3rd Year, VI Semester

LIST OF COURSES							
Year of study: **III.**							
Semester: **VI.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory joint	VPO121	Ship Construction and Combat Resilience	30	0	30	0	4
	VPO122	Military Communication Systems	30	0	15	0	4
	VPO123	Physical Education	0	0	30	0	0
TOTAL			**60**	**0**	**75**	**0**	**8**
Mandatory Naval Nautical Studies	VPN117	On-board Training III	0	0	0	30	2
	VPN118	Electronic Navigation	30	0	30	0	5
	VPN119	CargoHandlingII	30	0	45	0	5
	VPN120	Ship Handling Techniques	30	0	45	0	5
	VPO124	International Law	30	0	15	0	4
TOTAL			**120**	**0**	**135**	**30**	**21**
Mandatory Naval Marine Engineering	VPS108	Simulator and On-board Training III	0	0	45	0	2
	VPS109	Marine Engine Elements	45	0	30	0	5
	VPS110	Fuels, Lubricants, and Water	30	0	0	0	2
	VPS111	Marine Auxiliary Engines and Machinery	60	0	15	0	6
	VPS112	Marine Engines	60	0	30	0	6
TOTAL			**195**	**0**	**120**	**0**	**21**

4.10.7 4th Year, VII Semester

LIST OF COURSES							
Year of study: **IV.**							
Semester: **VII.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory joint	VPO125	General Tactics	45	0	30	0	6
	VPO126	Radio Detection Systems	30	0	15	0	3
	VPO127	History of Naval Warfare	30	15	0	0	3
	VPO128	Physical Education	0	0	30	0	0
TOTAL			**105**	**15**	**75**	**0**	**12**
Mandatory Naval Nautical Studies	VPN121	Naval Combat Systems I	45	0	15	0	4
	VPN122	Passage Planning	30	0	30	0	5
	VPN123	Astronomical Navigation	30	0	26	4	5
	VPS113	Ship Maintenance	30	0	15	0	3
	VPO129	*Criminal Law	35	0	15	0	4
	VPO130	*State Border Control	45	5	0	5	4
Note: * a mandatory course for MI students instead of the courses "Naval Combat Systems" and "Ship Maintenance"							
TOTAL			**135**	**0**	**86**	**4**	**17**
Mandatory Naval Marine Engineering	VPE111	Marine Power Electronics	30	0	15	0	4
	VPS114	Marine Engine Systems	60	0	30	0	6
	VPS115	Marine Hydraulics and Pneumatics	30	0	15	0	4
	VPE112	Automation of Marine Engine Systems	45	0	30	0	4
TOTAL			**165**	**0**	**90**	**0**	**18**

4.10.8 4th Year, VIII Semester

LIST OF COURSES							
Year of study: **IV.**							
Semester: **VIII.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory joint	VPN125	Electronic Warfare	45	0	15	0	4
	VPN126	Basic Naval Principles and Practices	40	0	15	0	4
	VPN127	Safety Management and Risk in Shipping	45	0	5	10	4
	VPO131	Physical Education	0	0	30	0	0
TOTAL			**130**	**0**	**65**	**10**	**12**
Mandatory Naval Nautical Studies	VPN128	On-board Training IV	0	0	0	30	2
	VP0O132	Naval Combat Systems II	45	0	15	0	4
	VPN129	Tactical Navigation	30	0	30	0	5
	VPE115	Automation in Maritime Traffic	30	0	15	0	4
	VPN130	Modern Transport Technology	45	0	30	0	5
	VPO133	* Misdemeanour Law	60	0	0	0	5
	VPO134	* Police Powers and Their Application	45	0	15	0	4
Note: * a mandatory course for NNS students instead of the courses "Naval Combat Systems II" and "Tactical Navigation"							
TOTAL			**150**	**0**	**90**	**30**	**20**
MandatoryNaval Marine Engineering	VPS116	Simulator and On-board Training IV	0	0	45	0	2
	VPS117	Naval Combat Systems	45	0	15	0	4
	VPS118	Breakdown and Failure Diagnosis	30	0	15	0	3
	VPS119	Marine Refrigerating and Air-conditioning systems	30	0	15	0	4
	VPS120	Naval Propulsion Systems	60	0	30	0	7
TOTAL			**165**	**0**	**120**	**0**	**20**

4.10.9 5th Year, IX Semester

LIST OF COURSES							
Year of study: **V.**							
Semester: **IX.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory **(joint)**	VPO135	Scientific Research Methodology	30	0	15	0	4
	VPO136	Process Modelling and Simulation	45	0	30	0	6
	VPN131	Maritime Integrated Safety and Control Systems	30	0	15	0	4
	VPS121	Maintenance Management	30	0	15	0	4
	VPN132	Crisis Management at Sea	30	0	15	0	5
	VPO137	Military Logistic Systems Management	30	0	30	0	5
	VPO138	Physical Education	0	0	30	0	0
TOTAL			**195**	**0**	**150**	**0**	**28**

4.10.10 5th Year, X Semester

LIST OF COURSES							
Year of study: **V.**							
Semester: **X.**							
STATUS	**CODE**	**COURSE**	**HOURS PER SEMESTER**				**ECTS**
			L	**S**	**E**	**F**	
Mandatory **(joint)**	VPN133	Hydrographic Engineering	45	0	15	0	5
	VPO139	Professional Practice	60	0	180	0	10
	VPO140	Master thesis	0	0	120	0	15
TOTAL			**105**	**0**	**315**	**0**	**32**

4.11 DESCRIPTION OF THE STUDY PROGRAMME COURSE

4.11.1 1st Year, I Semester

4.11.1.1 Maritime English I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">MARITIME ENGLISH I</td></tr>
<tr><td>Code</td><td>VPO101</td><td>Year of study</td><td colspan="4">1</td></tr>
<tr><td>Course teacher</td><td>Adelija Čulić Viskota, Ph.D</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Silvana Kokan, M.Ed.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">20</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Acquiring basic and specalized English language skills and competencies in order to educate students for obtaining certificates of competency and authorization for the highest ranking seafaring officers (according to STCW 1995 Convention requirements with its annexes and amendments) - English as the language of official maritime communication.
Mastering presentation skills on maritime topics.

Encouraging and developing students' cognitive abilities as well as developing basic language skills: listening, reading, writing and speaking.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Upon completion of the course, students will be able to communicate in English, as follows:
- identify terminology related to structural members of a ship and ship's equipment;
- present different merchant ship types and their purposes;
- categorize terminology related to ship crews and the organisation of ship departments;
- explain duties and responsibilities of ship crews;
- identify main parts of ship's diesel engine and fuel system;
- describe and compare main weather patterns;
- identify causes and consequences of tides and currents;
- distinguish terms for main parts of ports and port facilities;
- distinguish terms for various types of cargo and cargo handling equipment.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:

1. Importance of Maritime English: STCW and SMCP;
2. Shipbuilding (naval architecture);
3. Types of vessels: Transportation
4. Types of vessels: Assistance and service
5. Manning;
6. Engineering: Diesel Engines, Auxiliary Engines</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">7. Engineering: The Fuel System, Lubrication, Cooling the Engine
8. Revision
9. Meteorology;
10. Currents & Winds;
11. Tides & Waves;
12. The Ports of Split and Rijeka;
13. Cargo Handling Equipment;
14. Loading, Discharging and Trim;
15. Revision;

Exercises:

1. Present Simple vs Present Continuous (active) / Describing a ship
2. Present Simple vs. Preset Continuous (passive) / Describing structural members of a ship
3. Past Simple vs Past continuous (active) / Presenting Transportation Vessels
4. Past Simple vs Past Continuous (passive) / Presenting Assistance and Service vessels
5. Present Perfect (active / passive) / Describing shipboard duties
6. Past Perfect (active / passive) / Describing parts of diesel and auxiliary engines
7. Expressing Future (active / passive) / Describing the fuel system, lubrication and cooling the engine
8. Midterm exam
9. Question Forms / Describing weather systems
10. Nouns: Countable and Uncountable / Classifying currents and winds
11. Adjectives: Comparison / Describing tides
12. Adverbs: Comparison / Presenting port facilities and equipment
13. Articles / Identifying cargo handling equipment
14. Modal verbs and expressions / Analysing a stowage plan
15. End of term exam</td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☒field work</td><td colspan="3">☒ independent assignments
☒ multimedia
☐ laboratory
☐ tutorials</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Full time students' responsibilities
Students have an obligation to attend classes regularly and participate actively, bring class materials and prepare assignments on regular basis. The maximum of six hours of absence is allowed, including both, absence from the lectures or exercises. Class attendance is required in order to obtain the course teacher’s signature at the end of a semester. In case students are denied the course teacher’s signature, they are to re-enrol in the course in the following academic year.</td></tr>
<tr><td rowspan="3">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
</table>

	Midterm/ End of term exams	1.5	Oral exam	1	(Other)	
	Written exam		Project		(Other)	

Assessment and evaluation of full-time students' work

Final exam comprises two parts, a written and oral exam. The written exam may be successfully completed by taking a midterm and end of term exam. Tested content is based on class materials and it comprises professional terminology and grammar. Students have an option to complete the written exam before the beginning of the examination period. In this case, at the final exam, students shall take only the oral exam. If students fail the midterm/end of term exam but fulfil the minimum of class responsibilities, they are allowed to take the entire final exam in the allocated examination period. It is required to achieve at least 50% of the points at the midterm /end of term exams/written exam in order to access the oral exam. Students have to apply for the final exam in the examination period in order to gain access to the final exam and in order to have the grade entered into the system. Exam application and application withdrawal are done via Studomat, an online student portal.

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance and activity level at exercises	max. 6 hours of absence during a semester	10
Midterm / End of term exams	50	40
Total		50 – in this case student doesn't take written exam

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Practical exam (written)	50	20
Theoretical exam (written and/or oral)	50	50
Pre-activities (include all elements of continuous evaluation)	100	30
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Fails to meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above average achievement with occasional mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**

	1. van Kluijven, P.C. (2003) *International Maritime English Programme*, Alk&Heinen, Alkmaar	12	Yes
Optional literature (at the time of submission of study programme proposal)	Pritchard, B. (1995) *Maritime English 1*, Školska knjiga, Zagreb Pritchard, B. (1989) *Hrvatsko-engleski rječnik pomorskog nazivlja*, Školska knjiga, Zagreb van Kluiven, P.C. (2011) *The International Maritime Dictionary Part 2*, De Alk & Heijnen, Carić, T. i Plančić, B. (2008) *Englesko-hrvatski pomorski slikovni rječnik*, Pomorski fakultet Sveučilišta u Splitu		
Quality assurance methods that ensure the acquisition of exit competencies	Students' questionnaire, attendance list, supervision of teaching		
Other (as the proposer wishes to add)			

4.11.1.2 Mathematics I

NAME OF THE COURSE	MATHEMATICS I					
Code	VPO102	Year of study	1st			
Course teacher	Nikola Koceić-Bilan, Ph.D.	Credits (ECTS)	5			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Basic knowledge of the mathematics areas (basic algebra, mathematical analysis and corresponding mathematical methods) that are necessary for studying and student performance in other courses within the curriculum.					
Course enrolment requirements and entry competencies required for the course						
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Recognise basic concepts of set theory; 2. Solve tasks inside the sets of real and complex numbers; 3. Express and describe the elements of linear algebra 4. Interpret solutions of a system of linear equations and matrix, together with vector algebra and analytic geometry; 4. Examine continuous functions and calculate their limes; 5. Analyse convergent sequences and series; 6. Apply differential calculus on examining the performance of real functions; 7. Describe the performance of real elementary functions.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Introduction. 2. Reviewing symbols. Sets. Combinatorics. 3. Real and complex numbers. 4. Elements of linear algebra. (1/2) 5. Elements of linear algebra. (2/2) 6. Vector algebra. 7. Analytic geometry of space. 8. Elementary functions.					

	9. Continuous function and limits of functions. 10. Infinite sequences and real numbers series. 11. Definition of derivatives. Derivatives of the elementary functions. Derivatives of composite functions. 12. Logarithmic derivatives. Derivatives of implicit and parametric function. Higher order derivatives. 13. Tangent and normal in the graph of a function. Basic theorems of differential calculus. Application of derivation in determining limits of functions. 14. Analyze function behaviors with derivatives. Curve sketching. 15. Reviewing and revision. **Exercises:** 1. Revision of elementary mathematics. 2. Sets. Combinatorics. 3. Real and complex numbers. 4. Matrix and determinant. 5. Systems of linear equations. 6. Vector algebra. 7. Analytic geometry of space. 8. Elementary functions. *1st midterm exam* 9. Continuous function and limes of a function. 10. Infinite sequences and real numbers series. 11. Elementary functions derivation techniques. Composition of functions derivation. 12. Logarithmic derivation. Derivation of implicit and parametric function. Higher order derivation. 13. Tangent and normal in the graph of a function. Application of derivation in determining limes of functions. 14. Examining the flux and drawing graph of functions. 15. *2nd midterm exam*
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ on line in entirety ☐ partial e-learning ☐ field work ☐ individual assignments ☒ multimedia ☐ lab exercises ☐ mentoring ☐ (other)
Student responsibilities	**Full time students' responsibilities** Attending lectures and auditory exercises for at least 80% of provided hours. Active participation in lectures and regular attendance at midterm/end of term exams (there are two midterm exams). Passing both midterm exams exempts the student from attending the final written exam. After passing the written part of the exam the student must attend the oral exam. In case the student does not attend the lectures regularly he/she is obligated to enrol in the course again next academic year.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Midterm exams	2,5	Oral exam	1	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Each student must attend the written and oral exam.

Written part of the exam consists of midterm/end of term exams (during the 8th and 15th week of the course) and of the final written exam (during the examination term). After passing the written part of the exam the student must attend the oral exam. In case a student is extremely active during the lectures and is content with his/her grade of the written exam, he/she can be exempt from attending the oral part of the exam. The student must have at least 50% of the maximum number of points to pass the midterm/end of term exam. The student must pass both exams to be spared of taking the final written exam. If the student passes only one of the two exams (midterm/end of term), he/she will be exempt from that part of the exam in the final written exam. The grade of the written part of the exam is based on the mean value of the midterm/end of term exam points or the final written exam points (if the student has not passed the midterm/end of term exams).

The students' attendance and activity are monitored during the course and are added to the final grade of the course.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance and activity during the course	80 The most active students gain 5-10 points, depending of the activity.	10
Midterm exam	50	30
End of term exam	50	30
Total		70 - in this case the student can attend the oral exam

The final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written exam	50	60
Oral exam	50	30
Previous activities (include all indicators of the continuous evaluation)	80	10
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above-average achievement mistakes with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	https://www.pfst.hr/hr/component/intranet/?view=sskolegijmaterijal		Yes
	Strang, G.: Linear Algebra, Wellesley-Cambridge Press, 2009		Yes
	John Bird, Higher Engineering Mathematics 6th Edition, published by Newnes 2010. British Library https://zodml.org/sites/default/files/Higher_Engineering_Mathematics_%28Sixth_Edition%29.pdf		Yes
	Hoffmann, L. D., Bradley, G. L. and Rosen, K. H., Applied Calculus for Business, Economics, and the Social and Life Sciences, 11th edition, McGraw-Hill, 2012.https://contabeisueg.files.wordpress.com/2016/08/cc3a1lculo-um-curso-moderno-e-suas-aplicac3a7c3b5es-10-edic3a7c3a3o-l-d-hoffmann-g-l-bradley.pdf		Yes
	Abramson, J.Precalculus, openstax™, 2014 https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Precalculus-OP.pdf		Yes
Optional literature (at the time of submission of study programme proposal)	https://soaneemrana.org/onewebmedia/ADVANCED%20ENGINEERING%20MATHEMATICS%20BY%20ERWIN%20ERESZIG1.pdf http://menso88.weebly.com/uploads/1/7/5/8/17586891/textbook_og_engineering_matematics.pdf Finney, F.: Calculus and Analytical geometry Addison- Wesley, ISBN-13: 978-0201531749 http://sandbox.hlt.bme.hu/~gaebor/gyakanyag/Book/ Strang, G.:Essays in Linear Algebra, Wellesley-Cambridge Press, 2012 Yusuf, S.M.: Calculus With Analytic Geometry, Group of Jg Network, 2012		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty.		
Other (as the proposer wishes to add)			

4.11.1.3 Applied Computer Science

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">APPLIED COMPUTER SCIENCE</td></tr>
<tr><td>Code</td><td>VPO103</td><td>Year of study</td><td colspan="3">1st</td></tr>
<tr><td>Course teacher</td><td>Anita Gudelj,Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">Associate lecturers</td><td rowspan="2">Hrvoje Karna, Ph.D.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3">20%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Familiarisation with the structure and the operation principles of computers and acquiring knowledge from the areas of software and basic programming, which are necessary for understanding program packages needed in performing maritime processes.
Acquiring knowledge and skills for text editing and spread sheet design.
Training students to solve problems by developing algorithms and implementing them by using a computer programming language.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. Describe a computer from the point of view of its functional and physical model features.
2. Distinguish the features of the hardware components.
3. Explain the components and functions of computer networks.
4. Identify various network services.
5. Describe various types of computer software and explain the principles of operation system
6. Make use of general purpose application packages (MS Word and MS Excel) to address real-life problems
7. Develop an algorithm and design a program by using the constructs of selected program language.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5"><u>Lectures:</u>
1. Basic information science terminology. Introduction to marine computer application.
2. Mathematical-logic computer fundamentals.
3. Computer architecture and the fetch-execute cycle. Microprocessor and buses.
4. Memory. Primary memories.
5. Secondary storage devices. Input devices. Output devices.
6. Computer networks.
7. Protocols. Network types. LAN. Internet.
8. Cybercrime and security.
9. 1st Midterm exam. Computer software. System software.
10. Operating system. Programming languages and their translators.
11. Algorithm design and programming logic.
12. Programming concepts: Data types. Operators.
13. Control Structures/Statements. The concepts of sequence, selection.
14. Iteration statements or loops: WHILE loop. FOR loop.
15. 2nd Midterm exam.

<u>Exercises:</u>
1. Operating system. Text processor - MS Word.</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">2. MS Word; editing symbols and objects, tables, equations, drawing shapes…
3. MS Word: styles, format paragraph, format page, content design.
MS Word – 1st Midterm exam.
4. Spread sheet Applications - MS Excel: work sheet, work book, row number, column letter, cell and an active cell, reference area.
5. Formulae. Basic functions: Math & Trig, Statistical, Logical
6. IF function. Data sort.
7. MS Excel – charts.
8. MS Excel – 2nd Midterm exam
9. Computer language C/C++ and its compilation. C- Character set. Data Types.
10. Input and Output Functions. Assignment statements.
11. Operators: Arithmetic, Increment & Decrement, Relational, Logical, Expressions.
12. Control statements: IF-ELSE function
13. Control statement: FOR loop
14. Control statement: WHILE loop, DO WHILE loop
15. C – 3th Midterm exam.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☒ partial e-learning
☐ field work</td><td colspan="3">☒ individual assignments
☐ multimedia
☒ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Full time students' responsibilities
The student is expected to attend lectures for at least 80% of provided hours and laboratory exercises for 100% of provided hours. Active participation in lectures, exercises and regular attendance in exams. If (only) one laboratory exercise is missed, the next lab. exercise will be substituted.
During the course there are 5 midterm exams, each one will last between 30 and 45 minutes; two midterm exams concerning the theory and three midterm exams relating to the matter worked in laboratory classes (computer exercises on the following topics: MSWord, MS Excel, develop solutions to tasks using a high-level programming language C++).
In case the student does not attend the lectures/exercises regularly or does not pass 1st or 2nd midterm exam from lab. exercises he/she is obligated to enrol in the course again next year.

Passing all midterm exams exempts the student from attending the final exam.
To pass this course, students must:
Obtain a minimum score 50% on each midterm exam.</td></tr>
<tr><td rowspan="6">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Self-study and homework assignments (Other)</td><td>0,5</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ Final exams</td><td>1,5</td><td>Oral exam</td><td>0.5</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
On-Line test (short answers to essay question in MELIN e-learning system) 10 points
Midterm exams – matter discussed in exercises: 45 points
PT1 Test about practice of themes 1-3 from exercises (WORD): 10 points</td></tr>
</table>

PT2 Test about practice of themes 4-7 from exercises (EXCEL): 15 points
PT3 Test about practice of themes 8-14 from exercises (C++): 20 points

Midterm exams – matter discussed in lectures (45 points)
T1 Exam on themes 2-8: 22,5 points
T2 Exam on themes 9-14: 22,5 points

Total points: 100
The formative assessments aim to prepare students for the summative assessments. The midterm exams T1 and T2 test Learning Outcomes 1-5. The midterm exams PT1, PT2 and PT3 test Learning Outcomes 6, 7.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance Formative assessments and activities	At least 80 On-Line tests	10
Midterm exams-exercises	50	45
Midterm exams-lectures	50	45
Total		100

If the student passes only one of two midterm exams relating to lectures, he/she will be exempt from that part in the final written exam.

If the student does not pass the midterm PT3 he/she should be examined on a written exam as a part of the final exam.

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written exam about practice (Problem-solving and Programming)	50	20
Exam about lectures (written or oral)	50	45
Previous activities (include all indicators of continuous evaluation)	50	35
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49,9	Does not meet minimum criteria	Fail (1)
50-61,9	Meets minimum criteria	Sufficient (2)
62-74,9	Average success with noticeable mistakes	Good (3)
75-87,9	Above-average success with few mistakes	Very good (4)

	88-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Merlin portal at https://moodle.srce.hr> Resources by Course		Yes
	Ashok Arora. Computer Fundamentals and Applications. Publisher: Vikas, 2018. https://www.amazon.com/Computer-Fundamentals-Applications-Ashok-Arora-ebook/dp/B00UN5KR0K		YES
	Ralph De Arazoza. Technology: At Your Service, McGraw Hill, 2nd edition – eTextbook, 2018. https://www.amazon.com/Technology-Your-Service-Ralph-Arazoza/dp/0073516872		YES
	Yashavant Kanetkar. Let us C. 16th Edition. BPB Publications, 2017.		Yes
Optional literature (at the time of submission of study programme proposal)	http://www.computerworld.com http://www.computing.co.uk https://www.sciencedaily.com/news/computers_math/mobile_computing/ T. Zhang, C in 24 hours, SAMS Publishing		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001).		
Other (as the proposer wishes to add)	It is necessary to perform exercises in groups in a 1/1 way, i.e. one student at one computer		

4.11.1.4 Maritime Law

NAME OF THE COURSE	MARITIME LAW					
Code	VPO104	Year of study	1st			
Course teacher	Ranka Petrinović, Ph.D. Nikola Mandić, Ph.D.	Credits (ECTS)	3			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	0	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	The main goal of the course is to familiarise students with: international and national regulations on the rights and obligations of the states in marine and submarine areas; procedures for carrying out maritime administrative formalities on arrival, stay and departure of the ship from the port; the state-legal position of the ship, meeting the (international) requirements on the safety of navigation, particularly on the protection of human life at sea and protection of the marine environment; rights and obligations of the master and other crew members, and all persons involved in the maritime industry; maritime property institutes and the overview of the Croatian and international maritime property law.					

Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	- Identify, distinguish and compare the sea zones in accordance with the International Law of the Sea. - Classify types of vessels. - Distinguish basic concepts of maritime administrative law. - Analyse the organization of the vessel traffic service and inspection. - Differentiate the rights and obligations in the Labour Law with relation to seafarers. - Identify and classify charter parties. Distinguish and compare maritime average. - Categorise the types of marine insurance. - Analyse the national and international regulations in the International Law of the Sea, Maritime administrative law and Maritime labour law, regulations governing charter parties, maritime average and maritime insurance.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Definition, meaning and sources of maritime law and law of the sea. 2. International law of the sea – the UN Convention on the Law of the Sea; sea zones. 3. Protection of marine environment; MARPOL Convention. 4. Maritime administrative law – department of navigation safety in the Republic of Croatia, Coast Guard. 5. Maritime administrative law – maritime domain, ports, inspection affairs. 6. The convention of maritime administrative law. 7. SOLAS Convention; ISM Code. 8. Ship's documents and books. 9. Maritime labour law; Maritime Labour Convention (No. 186). 10. The legal concept of ship, the type of ships and ship individualization. 11. The convention of carriage of goods by sea; Contracts of Carriage of Goods by Sea – fulfilment of contract. 12. Contract of Carriage of Passengers and Luggage by Sea; Contract on Towing, Bareboat Charter – fulfilment of contracts. 13. General average; Salvage. 14. The responsibility for the pollution of the marine environment; Collision of ships. 15. Marine insurance.
Format of instruction	☒ lectures ☐ seminars and workshops ☐ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work ☐ individual assignments ☐ multimedia ☐ laboratory ☐ mentoring ☐ (other)
Student responsibilities	**Full time students' responsibilities** Students must attend lectures. Their presence shall be registered and kept in a record. In order to get the signature, students must attend at least 80% of the lectures In case of insufficient attendance, the students will not be granted a signature and shall be obliged to enrol in the course the following year. Students may take the oral part of the exam through continuous evaluations during the semester, by taking mid term tests. Students who do not pass the mid term test and have obtained the signature must take the written exam during the exam period. Students who have passed the exam via mid term tests must register for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.

<table>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.125</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>1.5</td><td>Oral exam</td><td>0.375</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">
Assessment and evaluation of full-time students' work
Class attendance is compulsory for regular students and a precondition for obtaining a signature is attendance at 80% of the lectures.
Mid term tests are organized during the semester. The first mid term test covers lectures 1 to 5 and is taken in week 6 of the lectures. The second mid term test covers lectures from 6 to 10 is taken in week 11 of the lectures The third mid term test covers lectures from 11 to 15 is taken in week 15 of the lectures. The example questions are at the end of all lectures.
To pass the test, one must have at least 50% of the points. Students who for objective reasons do not take the midterm test or do not pass the minimum, have to repeat the exam.
The final mark is given based on presence at lectures and on the mid term test. Students who do not take the mid term test during the semester but have been granted a signature may take the written exam in the exam period. The same rules and criteria apply for the exam period evaluation as for continuous knowledge testing.

Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance at lectures and active participation in exercises</td><td>95</td><td>10</td></tr>
<tr><td>Continous evaluating (Midterm exams)</td><td>50</td><td>90</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Test or mid term test (written)</td><td>50</td><td>90</td></tr>
<tr><td>Previous activity (including all continuous test indicators)</td><td>95</td><td>10</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0 - 49,9</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50 - 61,9</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>62 - 74,9</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>75 - 87,9</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>88 - 100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table>
</td></tr>
</table>

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Christopher Hill, Yash Kulkarni: Maritime Law (Lloyd's Practical Shipping Guides), Informa Law from Routledge; 6 edition, 2014	1	NO
	Susan Hodges, Cristopher Hill: Principles of Maritime Law, Informa Profesional, 2001	1	NO
Optional literature (at the time of submission of study programme proposal)	Aleka Mandaraka-Sheppard: Modern Admirality Law, Caveddish Publishing Limited, 2001. Maritme Code, Official Gazette Nos. 181/04, 76/07, 146/08, 61/11, 56/13, 26/15 and 17/19. MLC Convention MARPOL Convention SOLAS Convention STCW Convention		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by the University of Split, List of student attendance, Teaching process supervision by the Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001).		
Other (as the proposer wishes to add)	-		

4.11.1.5 Academic Writing

NAME OF THE COURSE	ACADEMIC WRITING					
Code	VPO105	Year of study	1st			
Course teacher	Luka Vukić, Ph.D.	Credits (ECTS)	3			
Associate teachers		Teaching methods (number of teaching hours per semester)	L	S	E	F
			15	5	10	0
Status of the course	Mandatory	Percentage of application of e-learning	20%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is through lectures and active participation through writing a seminar qualify students for independent research of scientific and professional literature and application of the methodology of preparation and development of professional, scientific and academic papers.					
Course enrolment requirements and entry competences required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Differentiating scientific and professional papers types. 2. Diversify different types of data sources. 3. Acquaintance with the methods of retrieving the data source. 4. Knowledge of scientific work organization. 5. To plan and design a scientific and professional work. 6. To plan and create different ways for presentation of their work (poster, presentation).					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:**					

<table>
<tr><td></td><td colspan="6">1. Introduction to academic writing. Classification and differences between professional, scientific and academic papers. (2)
2. Preparation for writing academic papers (topics selection, research, reading and analysing literature, taking notes and making sketches of the work). (2)
3. Introduction to different types of data sources - library catalogues and databases. How to search different types of data sources. (2)
4. The organization and structure of paper (Introduction, Methods, Results and Discussion). (4)
5. Citation and quotations in scientific texts. (2)
6. Computer data processing – Word text formatting and design and application of Excel tables and charts (1)
7. Creation of oral presentations ie. a PowerPoint presentation. (1)
8. Creation of oral presentations ie. a poster presentation. (1)

<u>Seminars:</u>
Computer data processing – Word text formatting and design and application of Excel tables and charts, content, etc. (S-2).
Creation of oral presentations ie. exposure and visual aspects of assisted presentations in PowerPoint. (S-2)
Creation of an oral presentation ie. a poster presentation. (S-1)

<u>Exercises:</u>
1.-2. Preparation for writing - select a theme. Retrieving different types of data sources. (2),
3.-4. Study and review of the literature. Taking notes. Creating a draft work. (2)
6.-10. Practical work - application of methods and techniques in writing academic papers. (6)</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☒ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☒ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Students must attend lectures. Their attendance shall be registered and kept in a record.
In order to get the signature, students must attend at least 80% of the lectures.
In case of insufficient attendance, the students will not be granted a signature and shall be obliged to enrol in the course the following year.
Students are required to write a seminar paper according to given instructions and give oral presentation.
Students who have passed the exam during the semester must register for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.</td></tr>
<tr><td rowspan="4">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0.75</td><td>Research</td><td>0.5</td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>e-learning</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td>1.25</td><td>Independent study and homework (other)</td><td>0.5</td></tr>
<tr><td>Midterm/ End of term exams</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
</table>

<table>
<tr><td></td><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">
Assessment and evaluation of full-time students' work
Students are evaluated continuously during the semester. They are obligated, independently or in team, to perform some tasks in designated time.
Students must independently write seminar paper according to given rules and in given time. Seminar paper must be orally presented.
Students who have passed the exam during the semester must register for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.

Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance of lectures and active participation in exercises</td><td>80</td><td>10</td></tr>
<tr><td>Independent/ team tasks</td><td>100</td><td>20</td></tr>
<tr><td>Seminar paper</td><td>100</td><td>70</td></tr>
<tr><td>Overall</td><td></td><td>100</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>65-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-89</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>90-100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table>
</td></tr>
<tr><td>Required literature (available in the library and via other media)</td><td colspan="2">Title</td><td>Number of copies in the library</td><td colspan="2">Availability via other media</td></tr>
<tr><td></td><td colspan="2">1. Carey S., A Beginner's Guide to Scientific Method 4th Edition, Wadsworth, Cengage Learning, USA, 2011.</td><td></td><td colspan="2">Yes</td></tr>
<tr><td></td><td colspan="2">2. https://researchleap.com/research-leap-manual-academic-writing/</td><td></td><td colspan="2">Yes</td></tr>
<tr><td></td><td colspan="2">3. Slišković M.: Academic writing – Lectures, & PPT presentation, Split, 2018.</td><td></td><td colspan="2">YES</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">1. Žugaj M., Osnove znanstvenog i stručnog rada, “Zagreb”, Samobor, 1989. Rijeci, Rijeka, 2001.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competencies</td><td colspan="6">Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

4.11.1.6 Seamanship I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">SEAMANSHIP I</td></tr>
<tr><td>Code</td><td>VPN101</td><td>Year of study</td><td colspan="3">1st</td></tr>
<tr><td>Course teacher</td><td>Rosanda Mulić, Ph.D.
Danijel Pušić, M.Eng.</td><td>Credits (ECTS)</td><td colspan="3">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Vesna Majić, MD
Dijana Cvitanović, MD
Tomislav Sunko, M.Eng.
Jakša Mišković, M.Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>55</td><td>5</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3">20%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Acquiring basic terms related to ships and ship construction with the emphasis on warships. Being familiar with types and characteristics of passenger, merchant and warships as well as with other types of ships. Acquiring skills necessary for working on a deck. Being familiar with the prevention of pollution requirements and with relevant international and national regulations – IMO, ILO, SOLAS, STCW, MARPOL... Recognizing potential dangers, assessing critical situations and learning how to take appropriate measures in order to protect human lives in maritime emergencies. Mastering the basic survival principles as well as first aid techniques.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">- Recognize different types of ships, explain basic terms in the field of ship construction and strength, with the emphasis on warships;
- Correct handling of deck equipment, life-saving apparatus and fire-fighting equipment;
- Obtain basic knowledge of relevant international and national regulations pertaining to human life and environmental protection, watchkeeping, Maritime Regulations and the Rules of Maritime Register of Shipping.
- Assess current situation and make appropriate decisions in order to save human lives in distress situations. Analyze opportunities and thoroughly plan actions for saving lives;
- Timely detect potential fire hazards, deploy fire-fighting teams and equipment and solve difficulties with minimum damage;
- Adjust all onboard activities to the minimum crew and passenger capacities in order to provide their safety, and adjust the degree of responsibility to the real circumstances. Timely detect potential incidents, investigate the causes and choose the best way to eliminate them;
- Assess the health condition of the injured or sick, administer first aid, prevent the occurrence of irreversible effects (impairment, disability, death);
- Apply appropriate procedures in order to shorten treatment and recovery period;
- Use basic onboard medical equipment.</td></tr>
</table>

Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1-2. Types of ships, - basic characteristics of different types of ships with the emphasis on warships. 3. Ship Construction – ship measurements, stresses, structure, markings, cargo handling equipment, anchoring equipment, life-saving apparatus. Construction and strength of a warship. 3. Deck equipment - deck equipment handling and maintenance. Ship ropes and lines: classification, characteristics, maintenance; steel wire ropes - classification, characteristics, maintenance and handling; 3. Ship ropes and lines: knots and splices, characteristics and significance of the knots, knot tying, characteristics and use of splices, making splices 4. Familiarization with the International Convention for the Prevention of Pollution from Ships – MARPOL 73/78. Measures to prevent pollution of the marine environment and the pertaining equipment (SMPEP, SOPEP) Introduction to the relevant national and international regulations. Croatian regulations on the protection of the sea and the marine environment – IMO conventions, International Convention on Load Lines, SOLAS – International Convention for the Safety of Life at Sea, STCW – International Convention on Standards of Training, Certification and Watchkeeping for Seafarers ITU Radio regulations, STP ships Agreement, 1971., Maritime Code, Watchkeeping Regulations, the Croatian Register of Shipping Rules, etc. 5. Personal survival and safety – survival techniques and SOLAS Safety Training Manual. Potential threats, training and precautions. Fire and sinking, muster lists and emergency signs. Abandon ship procedures, personal readiness, crew liabilities in the organization of abandoning the vessel, obligations to passengers, panic prevention, rescue boats launching, embarkation and staying clear of the vessel in distress. 6. Survival craft and rescue boats. Personal life-saving apparatus (life-jackets, lifebuoys, immersion suits). Survival at sea, threats, appropriate use of onboard life-saving equipment. Portable transceivers, search and rescue transponders (SART) and EPIRB. Helicopter rescue. 7. Fire-fighting principles, theory and fire conditions, flammable materials, division, detection and prevention of fires. Shipboard fire-fighting systems: water, foam, powder, carbon dioxide and halons. 8. Fire-fighting equipment and tools: hoses, nozzles, portable extinguishers, flame and fire alarms, fire-alarm ducts, fire station, general emergency alarm signal, fire-fighting plans, schedules, procedures, communication, fire patrols, drills, safety measures and fire extinguishing. Final analysis. 9. Personal safety and social responsibility. Safe operation of the vessel, adequate interpersonal relationships, understanding and obedience. Adherence to schedule and emergency procedures as well as precautions to prevent pollution /contamination of the sea and marine environment. Interpersonal relationships on board, rights, duties, obligations, employment, hygiene and health. 10. Nuclear, chemical and biological (NCB) protection on warships (NCB systems and way of their functioning, filter ventilation system, encapsulation and achieving overpressure in ship's compartments, decontamination of the ship, etc.). 11-15 First aid: First-aid administration. Basic principles of first-aid administration. Assessment of vital functions – ABC rule. General procedures at the scene of the accident. First aid in life-threatening situations: resuscitation, stopping bleeding, treatment of persons in the state of unconsciousness and shock. First-aid treatment for amputations.

	Administering first aid in case of poisoning. First aid for wounds, eye, head or backbone injuries, fractures, multiple trauma. Immobilisation. Disinfection of skin surrounding open wounds or burns. First aid in case of body injuries caused by extreme heat (burns, heatstroke) or cold. First aid for poisoning. First aid for eye injuries. First aid for hypothermia and heat exhaustion. Wound types and appropriate first aid. Transport. **Exercises:** 1. Basics of shipbuilding, different types of ships, ship construction materials, structural elements of a ship, cargo holds arrangement, navigation bridge, crew accommodation, engine room. Basics of ship construction: hull, freeboard, freeboard marking, displacement, draft measurements, other ship measurements, a visit to a ship in the port. Specifics of a warship construction. 2. Basics of ship construction: bow and stern, equipment, rudders and propellers, mooring equipment, cargo handling equipment, anchoring equipment, fire-fighting equipment, life-saving apparatus. 3-5. Ship lines: knots and splices, knot importance and characteristics, tying knots, characteristics and usage of splices, making splices. 6-7. Basic life-saving equipment: Abandon ship procedures. Means of communication in distress. Communication in distress. Communication with helicopters, planes. 8-9. Survival at sea and life- saving equipment handling. 9-10. Fire-fighting equipment handling. Extinguishing minor fires. Extinguishing major fires. Fire extinguishing in areas filled with smoke. 11. Nuclear, chemical and biological (NCB) protection on warships (NCB systems and their functioning, filter ventilation system, encapsulation and achieving overpressure in ship's compartments, decontamination of the ship, etc.). 11. Interpersonal relationships. Understanding commands, emergency procedures. Environmental pollution prevention measures. 12. First aid kit demonstration. Usage of first aid kit. Disinfectants. Usage of disinfectants. Personal protective equipment. Approaching a casualty: assessment and examination of a casualty (responsiveness, airways, breathing, circulation – ABC, quick trauma check up). Safety assessment at the scene of an accident. Medical check up training. 13. Cardiopulmonary resuscitation (*CPR*). Basic procedures (Basic life support – BLS). Usage of automated external defibrillator (AED) – demonstration. Training on manikins. Airways management. Choking. Administering oxygen. Usage of medical resuscitation kit. 14. Stopping bleeding. Bandage application. First aid for head, chest, stomach and limb injuries. First aid simulation for poisoning. First aid simulation for hypothermia. Preparing the casualty for transporting. 15. Immobilisation rules. Ways of immobilisation. Spinal immobilisation. Transporting positions.	
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐ on line in entirety ☐ partial e-learning	☐ individual assignments ☒ multimedia ☐ lab exercises ☐ mentoring ☐ (other)

<table>
<tr><td></td><td colspan="6">☒ field work</td><td colspan="6"></td></tr>
<tr><td>Student responsibilities</td><td colspan="12">Lectures and exercises are obligatory; there is a record of attendance. To obtain a signature min 80% of attendance at lectures and exercises is required, for specific course training minimum is 100 (95) %. In case a student fails to acquire minimal hours of attendance, student will not get a signature and accordingly has no right to apply for the exam.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td colspan="2">Class attendance</td><td>1</td><td colspan="2">Research</td><td></td><td colspan="2">Practical training</td><td>1</td></tr>
<tr><td colspan="2">Experimental work</td><td></td><td colspan="2">Report</td><td></td><td colspan="2">(Other)</td><td></td></tr>
<tr><td colspan="2">Essay</td><td></td><td colspan="2">Seminar paper</td><td>0,5</td><td colspan="2">(Other)</td><td></td></tr>
<tr><td colspan="2">Midterm/End of term exams</td><td>2,5</td><td colspan="2">Oral exam</td><td></td><td colspan="2">(Other)</td><td></td></tr>
<tr><td colspan="2">Written exam</td><td></td><td colspan="2">Project</td><td></td><td colspan="2">(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="12">
Assessment and evaluation of full-time students' work
Lectures and exercises are obligatory; there is a record of attendance. To obtain a signature min 80% of attendance at lectures and exercises is required, for specific course training minimum is 100 (95) %. In case a student fails to acquire minimal hours of attendance, student will not get a signature and accordingly has no right to apply for the exam.
No absentee notes can justify or replace attendance. In case of sickness or any other justified reason, students who have more than 80% of attendance, but do not have 100(95)% attendance of special course training, can get extra hours in other, additional terms during semester or later, but not later than one month after regular teaching part of semester.
All other students, i.e. students with less than 80% of attendance have no right to signature and must enrol in the course again next year.
Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Level of success (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance (lectures+exercise)</td><td>80/100</td><td>20</td></tr>
<tr><td>Midterm exam</td><td>50/75</td><td>70</td></tr>
<tr><td>E-learning</td><td>100</td><td>10</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table>
Grading nad evaluation of student work during classes and final exam
1st Midterm exam/ 7th week
2nd Midterm exam /14th week
Midterm exams dates are not in the lecture schedule, ie they are not planned as part of the class. Midterm exams are written only once. If a student passes both midterm exams he is exempted from writing the written part of the exam. If a student passes one midterm exam and the other fails the written part of the exam, he is released from the part he passed through the midterm exam.
</td></tr>
</table>

Midterm exams (parts of final exam) are available only during class attendance period, and final exam only during examination period at the end of semester. Requirement for the 2nd midterm exam is passing the 1st midterm exam. If a student passes the 1st midterm exam, and does not pass the 2nd midterm exam, and acquires the right to sign, it is valid only until the end of the academic year. It means that student will need to pass only the midterm exam that he didn't pass, during final examinations.

The written exam from theory is valid until the end of the academic year, ie the end of the corresponding deadlines. Students who re-enrol in the course in the following year are not recognized for parts of the exam. Time of writing the total exam (written): up to 1 school hour. The time of writing a midterm exam form theory (only during classes) is: up to 1 school hour. Students who do not pass the course through the midterm exams take the final written exam. The requirement for other students to take final examination is signature.

Continuous evaluation of students' performance

Elements of evaluation	**Achievement (min.%)**	**Portion of the final grade (%)**
Exam or midterm exams	50/100	60
Previous activities (including any indication of continuous assessment)	100	40
In total		100

Grading scale:

Percentage points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above average success with few mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

Required literature (available in the library and via other media)

Title	**Number of copies in the library**	**Availability via other media**
1. SNAME: Ship Design and Construction I & II,2003		Yes
2. Lechter, J.: TheGeometryofShips, 2010.		Yes
3. SOLAS Convention –Consolidated Edition 2009.		Yes
4. Life – saving appliances code (LSA) – Consolidated Edition 2010.		Yes

	5. International MedicalGuide for Ships, 3rd edition. World Health Organization, Geneva, 2007.		Yes
Optional literature (at the time of submission of study programme proposal)	1. The Best Seamanship, A Guide to Desk Skills, IMMAJ, 2006.		
Quality assurance methods that ensure the acquisition of exit competencies	University survey, list of student attendance, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.1.7 Military Leadership

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">MILITARY LEADERSHIP</td></tr>
<tr><td>Code</td><td>VPO141</td><td>Year of study</td><td colspan="4">1st</td></tr>
<tr><td>Course teacher</td><td>Dario Matika, Ph.D.
Luka Mihanović, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Mirko Šundov, Ph.D
Marijan Kostanjevac, M.Sc.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for all students</td><td>Percentage of application of e-learning</td><td colspan="4">20%</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">During this course students learn military values, principles and characteristics of commanders/leaders, and leadership theories in order to develop leadership capabilities and to define their own approach to leadership. Students acquire knowledge and skills required by officers to perform the role of commander and used directly and indirectly to influence subordinates through organization systems and procedures, organizational culture and ethical climate. Through integration of theoretical knowledge on military leadership with practical examples of leadership, students will understand the importance of leadership in the process of commanding for navy officers in the Croatian Armed Forces.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6"></td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">1. Understand and explain organizational leadership,
2. Understand the specifics of leadership in commanding for navy officers,
3. Understand the approach to Mission Command,
4. Understand the military values and characteristics of navy officers,
5. Understand the military leadership principles and apply them in the command process,
6. Identify sources of power and apply the methods of influence and leadership styles,
7. Understand the importance of group and teamwork in a unit,
8. Understand and be able to apply the methods of conflict management,
9. Apply the situational leadership model to lead subordinates,
10. Understand the influence of organizational culture on command.</td></tr>
</table>

Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. **Introduction to Military Leadership, 1 –***(course purpose, teaching subjects, learning outcomes, student obligations, assessment/grading).* 2. **Understanding Leadership, 3** – definition of leadership, what do leaders do, characteristics of leadership (what is it, or isn't, leadership), leadership mistakes, difficulties of leadership experience, comparison of leadership and management, leadership function. 3. **The Basics of Military Leadership, 3 –** definition and importance of military leadership, specifics of navy officer leadership, factors of military leadership*(leader, subordinate, and situation*). 4. **The Chain of Command and Leadership, 3 –** command components, authority and responsibility, structure of a military organization, commander's vision and its implementation, chain of command and the process of delegation, understanding the relation between command and leadership. 5. ***Leadership* and *Mission Command* Philosophy, 2–**leadership as the key element of combat power, understanding the principle of *Mission Command*. 6. **Military Values and Characteristics of Navy Officers, 3** – a. *Values*: commitment, determination, drive, respect for others, integrity, loyalty, b. *Characteristics***:** ability to assess, clarity and vision, communicativeness, innovativeness, trust, selflessness, self-discipline, courage, responsibility, tact, common sense.... **7. Leadership Principles in the Navy, 3 –** leadership principles,the process of solving leadership problems*,* bad leadership*(what is it, how it happens, why it happens),* criteria for assessing good leaders. **8. Power and Influence,3** – definition; sources and types of power *(positional and personal power);* relation between power and leadership; methods of influence; use of leadership styles; emotional intelligence. 9. **Groups and Group Development, 3** – definition and classification of groups, reasons for the creation of groups, stages of group development, group's structural dimension (roles, status, standard, structure and cohesion), understanding group structures. 10. **Team Leadership, 3**– understanding and development of teamwork, team building, roles and activities of leaders, advantages and disadvantages of teamwork, team dysfunction. 11. **Situational Approaches to Leadership, 3 –**situational leadership, use of situational models, command vs. Leadership effectiveness, following superiors – "You have to learn how to follow before you can lead". 12. **Leadership Communication**, 2**3** – communication process, military communication channels, communication obstacles, steps of effective communication, written communication, military briefing, formal appointment with the commanding officer, time management. 13. **Motivating Subordinates.** 2**3 –**definition, theories of motivation (content and process theories), advising, mentoring, negotiating. 14. **Conflict Management, 2 –**defining conflicts, the conflict process, (causes and consequences of organizational conflicts, types of conflicts and conflict management), functionality and dysfunctionality of conflicts. 15. **Organizational Culture and Command Climate, 2 -** the concept and definition of organizational culture, levels of organizational culture, symbols of organizational culture, organizational culture and leadership. 16. **Ethical Leadership, 2 –**meaning, leader's behaviour in different situations – what did he/she say or do, (honesty, showing

<table>
<tr><td></td><td colspan="6">understanding for subordinates, respect), ethical questions and standards, creating ethical climate.
Exercises:
1. Analysis of the (ship) commander's leadership experience
2. Analysis of the factors of military leadership (leader, subordinate, mission)
3. Identify the basic values and characteristics of the (ship's) commander while conducting operations.
4. Identify leadership principles in different situations
5. Use the criteria for assessing good leaders in realistic situations
6. Identify types of power, methods of influence, and leadership styles of the (ship's) commander
7. Identify stages of group development
8. Evaluate team efficiency
9. Evaluate the team's functionality and dysfunctionality
10. Assess the level of subordinate readiness
11. Analysis of an example of situational leadership in realistic situations
12. Analyse the platoon commander's briefing
13. Analyse the situation –motivating subordinates to carry out the mission
14. Analyse an example of a good and bad organizational culture in the unit
15. Analyse ethical examples of leadership in the Homeland War and international military operations.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐seminars and workshops
☒exercises
☐on-line in entirety
☒partial e-learning
☒field work</td><td colspan="3">☒individual assignments
☐multimedia
☐lab exercises
☐mentoring
☐other</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Students are required to attend lectures and exercises. In order to obtain the course teacher's signature, students must have 90% attendance at lectures and exercises. In case of insufficient attendance, students will lose their right to obtain the signature and possibility to take an exam.
The final grade in practical training includes the grade in seminar attendance, consulting the seminar reading materials and active participation in seminar discussions.
Students who pass the mid-term and end of term exams and have regular (90%) attendance in practical training are not required to take the oral exam.
The final passing grade will be given only if all elements of evaluation have been successfully achieved.
Absentee notes cannot justify absence from the class. Students who haven't met the necesary requirements to obtain the signature due to illness or some other justified reason and lack up to 20% of regular attendance in lectures and exercises, may be provided with consultations and given additional assignments. All other students, i.e. those with less than 50% class attendance, lose the right to obtain the signature and are required to re-enrol in this course next year.</td></tr>
<tr><td rowspan="3">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td>1</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other</td><td></td></tr>
</table>

equal to the ECTS value of the course)	Midterm/End of term exam	2	Oral exam	1	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

There is a midterm and end of term exam.

If sudents fail midterm/end of term exams, they are required to take an oral exam.

If they pass midterm/end of term exams, they get an average grade.

Students must have 90% attendance in lectures and exercises in order to obtain a signature.

Continuous evaluation of students'performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance and active participation in exercises	90	20
Midterm exam	50	30
End of term	50	30
Exercises and seminar discussions	50	20
Total		100

If students pass midterm/end of term exams and have 90% attendance in practical training, they are not required to take the written exam.

Final examination

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	90	20
Oral exam	50	80
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Fails to meet minimal criteria	Fail(1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above- average achievement with mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

Required literature (available in the library and via other media)

Title	**Number of copies in the library**	**Availability via other media**
NATO publications: • AJP-3.1, • AJP-3(B) • AJP-01(D);		Yes
Patrick Lencioni, Five Dysfunctions of a Team, 2012.		Yes

	, Organizational Culture and Leadership 4ed. 2010. *(36 pages)*		Yes
	Leadership and Ethics Book, St Amant NJROTC,2012.		Yes
Optional literature (at the time of submission of study programme proposal)	- Richard L. Daft, *Management,* 12th Edition, 2015. - Hughes-Ginnett-Curphy, *Leadership: Enhancing the Lessons of Experience,* 8th Edition, 2014. - Robert O. Wray Jr.: *Saltwater Leadership: A Primer on Leadership for the Junior Sea*-Service Officer, Naval Institute Press, 2013. - A. St. George, *The Royal Navy Way of Leadership*, International Edition, 2012. - Warren Bennis and Robert Thomas, *Crucibles of Leadership*, H. B. R., 2002. - Montor Karel, *Naval Leadership*: Voices of Experience, 2 Sub editions, Annapolis, MD: U.S. Naval Institute, 1998.		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire, teaching supervision.		
Other (as the proposer wishes to add)			

4.11.1.8 Military Training I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">MILITARY TRAINING I</td></tr>
<tr><td>Code</td><td>VPO119</td><td>Year of study</td><td colspan="4">1st</td></tr>
<tr><td>Course teacher</td><td>Luka Mihanović, Ph.D.</td><td>Copies (ECTS)</td><td colspan="4">2</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Hrvoje Šimleša</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>30</td></tr>
<tr><td>Status of the course</td><td>Mandatory for all students</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">To develop skills and train cadets in leading the team/squad during various tactical mission tasks in winter conditions.
To teach cadets about leadership and command duties in different tactical missions and situations as a team/squad leader.
To develop military virtues needed for naval officers, such as endurance, courage, resourcefulness and competence.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Cadets need to fulfil required standards for the PRT (Physical Readiness Test) and to finish prior theoretical part of the training.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">1. Apply specific skills in communication, organization and of planning of activities for the team/squad leadership.
2. Making decision independently and lead team/squad.
3. Develop, guide and implement creativity in daily team/squad tasks.
4. Know concepts, elements, factors and methods of preparations and executing tactical movement and employing fires.
5. Know concepts and methods of supporting the team before, during and after combat functions.
6. Know concepts, functions and procedures of engineering support and explosive ordnance disposal for force protection.
7. Know basic parts of personal weapons, using „4 golden rules“and handling of personal weapons.
8. Know how to do the orientation using all available orienteering means.
9. Know how to apply specific knowledge and skills of communication and CBRN means.
10. Know how to apply specific knowledge and skills of first aid emergency procedures as well as tactical combat casualty care.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:

1. Team/squad tactics, techniques and procedures.
2. Infantry weapons handling techniques and firing practice.
3. Military topography.
4. Communication devices, equipment and procedures.
5. CBRN.
6. First aid emergency treatment and tactical combat casualty care.</td></tr>
<tr><td>Format of instruction</td><td colspan="3">☐ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety</td><td colspan="3">☒ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor</td></tr>
</table>

	☐ partial e-learning ☒ field work	☐ (other)
Student responsibilities	**Attendance: 100 %**	

Screening student work *(name the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	0,75	Research		Practical training	
	Experimental work		Report		Skills demonstration	1,25
	Essay		Seminar		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

There will only be a practical test of knowledge and skills:
Cadet will assume the role of team/squad leader; cadet will demonstrate knowledge on personal and infantry weapons handling, first aid emergency treatment and tactical combat casualty care. The use of protective gas masks, orienteering on map as well as in real environment, use of communication devices.

Continuous evaluation of students'performance:

Elements of evaluation	Achievement(mi %)	Portion of the final grade (%)
Class attendance	100	40
Demonstration of knowledge and skills during classes, keeping logs	100	60
Total		100

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
FM 3-90 – Tactics		YES
FM 3-21.8 – The Infantry Rifle Platoon and Squad		YES
STANAG 2014		YES
Mladen Pahernik, Stanislav Frangeš, Robert Župan, Military Topography I – Topographic Land Objects and Military Topography II – Orientation and Topographic Maps		YES
APP-6 – Military Symbols for Land Based Systems (1986) APP-6(A) – Military Symbols for Land Based Systems (1998) APP-6(B) – Joint Symbology (2008) APP-6(C) – NATO Joint Military Symbology (2011)		YES
MIL-STD-2525 manuals from Defense Information Systems Agency (DISA)		YES
FM 101-5-1/MCRP 5-2A OPERATIONAL TERMS AND GRAPHICS (1997)		YES
Reeves, Ira L., The A B C of Rifle, „Revolver and Pistol Shooting“. Kansas City, MO, USA		YES
„NRA Gun Safety Rules“. The National Rifle Association of America. 2018.		YES
Butler, F. K.; Hagmann, J.; Butler, E. G. (1996-08-01). “Tactical combat casualty care in special operations”. Military Medicine. 161 Suppl: 3–16.		YES

	Terzuolo, E. ; "NATO and Weapons of Mass Destruction: Regional Alliance, Global Threats", 2006.		YES
	FM 24-18: Tactical Single Channel Radio Communications Techniques		YES
Optional literature (at the time of submission of study programme proposal)	FM 3-06 – Urban Operations		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, students' questionnaire, Faculty class inspection.		
Other (as the proposer wishes to add)			

4.11.1.9 Physical Education

NAME OF THE COURSE	**PHYSICAL EDUCATION**					
Code	VPO106	Year of study	1 st			
Course teacher	DomagojBagarić, M.P.Ed.	Credits (ECTS)	0			
Associate teachers	Ivica Bajaj,M.P.Ed.	Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.					
Course enrolment requirements and entry competencies required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Use part of the basic kinesiological motor knowledge about a certain kinesiological activity that is important for successful studying. Develop the abilities, characteristics and positive attitudes defined within the educational area of physical education which contribute to successful studying, and afterwards, to better and more efficient performance of military service. Recognize the need and importance of regular exercise in order to preserve one's health and improve the quality of life. Use methodological procedures while carrying out kinesiological activities.					

	Perform basic kinesiological programs on one's own. Reconsider acquired eating and regular exercise habits. Conduct the testing of anthropological characteristics.
Course content broken down in detail by weekly class schedule (syllabus)	**Exercise:** 1. Regular testing of physical abilities 2. The development of functional abilities 3. The development of motor abilities 4. Fitness programs 5. The basics of martial arts
Format of instruction:	☐Lectures ☐ Individual assignments ☐ Seminars ☐ Multimedia ☒ Exercises ☐ Lab exercises ☐ On-line in entirety ☐ Mentoring ☐ Field work
Student responsibilities	Students are required to participate in exercises. Records of student attendance are also kept.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance		Research		Practical training	
	Experimental work		Report		Independent study and homework (other)	
	Essay		Seminar paper		(Other)	
	Midterm/ End of term exams		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** During the academic year, students are required to take two regular physical fitness tests to meet the established norms.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**

Optional literature (at the time of submission of study programme proposal)	I. Jukić and associates: Dijagnostika kondicijske pripremljenosti vojnika, Zagreb 2008. Tudor O. Bompa, Ph.D..: Periodizacija teorija i metodologija treninga, Zagreb, 2006.
Quality assurance methods that ensure acquisition of learning outcomes	University survey and teaching supervision.
Other (as the proposer wishes to add)	

4.11.2 1st Year, II Semester

4.11.2.1 Maritime English II

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">MARITIME ENGLISH II</td></tr>
<tr><td>Code</td><td>VPO101</td><td>Year of study</td><td colspan="4">1</td></tr>
<tr><td>Course teacher</td><td>Adelija Čulić Viskota, Ph.D</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Silvana Kokan, M.Ed.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">20</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Acquiring basic and specalized English language skills and competencies in order to educate students for obtaining certificates of competency for the highest ranking seafaring officers (according to STCW 1995 Convention requirements with its annexes and amendments) - English as the language of official maritime communication.

Mastering presentation skills on maritime topics.

Encouraging and developing students' cognitive abilities as well as developing basic language skills: listening, reading, writing and speaking.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Successful completion of Maritime English I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Upon completion of the course, students will be able to communicate in English, as follows:

- distinguish terms related to anchoring, mooring, berthing and leaving berth;
- identify parts of ship's navigating bridge, describe the way they operate and their integration into navigation systems;
- comment the most important inventions in the history of navigation, relate them to navigating techniques and the usage of seacharts;
- present buoyage systems;
- describe and clasify the master and crews' duties when meeting heavy weather;
- describe ship's safety systems and comment COLREGS;
- distinguish types of maritime communication and VHF messages in urgent circumstances;
- discuss the causes and consequences of maritime pollution;
- identify basic types of maritime documents.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:

1. Introduction to Navigation
2. Anchoring/Anchors, Berthing
3. Leaving Berth, Underway
4. The Navigating Bridge
5. Electronic Aids to Navigation
6. Marine Radar
7. Sea Charts</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">8. Revision
9. Buoyage Systems
10. Meeting Heavy Weather
11. Safety at Sea
12. Maritime Communication
13. Maritime Environmental Protection
14. Documents
15. Revision

Exercises:
1. Tenses: Revision / Describing types of navigation
2. Narrative Tenses / Describing anchors, berthing
3. Conditional Sentences: Types 0 &1 / Presenting the procedures while leaving berth and while underway
4. Conditional Sentences: Type 2 / Identifying parts of the ship's navigating bridge
5. Conditional Sentences: Type 3 / Identifying electronic aids to navigation
6. Modals: Present Deductions / Presenting marine radars
7. Modals: Past Deductions / Describing types of sea charts
8. Midterm exam
9. Gerunds & Infinitives / Defining buoyage systems
10. Expressions of Quantity / Defining ship's motions and stresses in heavy weather
11. Reported Speech: Statements / Presenting safety equipment
12. Reported Speech: Commands / Transmitting distress, urgency and safety messages
13. Reported Speech: Questions / Discussing causes of maritime pollution and possible solutions
14. Defining / Non-defining Relative clauses / Filling in a form
15. End of course exam</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☒field work</td><td colspan="3">☒ independent assignments
☒ multimedia
☐ laboratory
☐ tutorials</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Full time students' responsibilities
Students are required to attend classes regularly and participate actively, bring class materials and prepare assignments on regular basis. A maximum of six hours of absence is allowed, including both, absence from the lectures or exercises. Class attendance is required in order to obtain the course teacher’s signature at the end of a semester. In case students are denied the right for signature, they are to re-enrol in the course the following academic year.</td></tr>
<tr><td rowspan="2">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits</td><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
</table>

is equal to the ECTS value of the course)	Essay		Seminar paper		(Other)	
	Midterm/ End of term exams	1.5	Oral exam	1	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Final exam comprises two parts, a written and oral exam. The written exam may be successfully completed by taking a midterm and end of term exam. Tested content is based on class materials and it comprises professional terminology and grammar. Students have an option to complete the written exam before the beginning of the examination period. In this case, at the final exam, students shall take only the oral exam. If students fail the midterm/end of term exam but fulfil the minimum of class responsibilities, they are allowed to take the entire final exam in the allocated examination period. It is required to achieve at minimum 50% of the points at the midterm /end of term exams/written exam in order to access the oral exam. Students have to apply for the final exam in the examination period in order to gain access to the exam and in order to have the grade entered into the system. Exam application and application withdrawal are done through Studomat, an online student portal.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance and activity level at exercises	max. 6 hours of absence during a semester	10
Midterm / End of term exams	50	40
Total		50 – in this case student doesn't take written exam

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Practical exam (written)	50	20
Theoretical exam (written and/or oral)	50	50
Pre-activities (include all elements of continuous evaluation)	100	30
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Fails to meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above average achievement with occasional mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. van Kluijven, P.C. (2003) *International Maritime English Programme*, Alk&Heinen, Alkmaar	12	Yes
Optional literature (at the time of submission of study programme proposal)	Pritchard, B. (1995) *Maritime English 1*, Školska knjiga, Zagreb Pritchard, B. (1989) *Hrvatsko-engleski rječnik pomorskog nazivlja*, Školska knjiga, Zagreb van Kluiven, P.C. (2011)*The International Maritime Dictionary Part 2*, De Alk & Heijnen Carić, T. I Plančić, B. (2008) *Englesko-hrvatski pomorski slikovni rječnik*, Pomorski fakultet Sveučilišta u Splitu, Split		
Quality assurance methods that ensure the acquisition of exit competencies	Students' questionnaire, attendance list, supervision of teaching		
Other (as the proposer wishes to add)			

4.11.2.2 Mathematics II

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">MATHEMATICS II</td></tr>
<tr><td>Code</td><td>VPO108</td><td>Year of study</td><td colspan="4">1st</td></tr>
<tr><td>Course teacher</td><td>Nikola Koceić-Bilan, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">10%</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Acquire basic knowledge of the mathematics areas (algebra basics, mathematical analysis and corresponding mathematical methods) that are necessary for studying and student performance in other courses within the curriculum.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Successful completion of Mathematics I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">1. Express primitive elementary function and calculate the indefinite integrals;
2. Interpret basic integration methods and apply Newton - Leibnitz formula in solving defined integrals;
3. Recognise and solve improper integrals;
4. Apply defined integrals in calculating areas, arc length, volume and area of revolution areas;
5. Analyse and solve problems of functions featuring a set of variables;
6. Interpret, solve and explain essential differential equations of the first and second order.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:
1. Introduction. Definition and basic features of the indefinite integral. Standard integrals.
2. Integration by substitution. Integration using partial fractions.
3. Integration of rational functions. Integration of some irrational functions.
4. Integration of trigonometric functions. Definite integrals and their properties.
5. Connection between definite and indefinite integral. Newton-Leibnitz formula. Improper integrals.
6. Some applications of definite integral: Determination areas under and between curves. Calculating arc length.
7. Calculating surface area and volume of solids of revolution.
8. Functions of several variables: Natural domain and geometrical presentation. Partial derivatives.
9. Total differential and applications. Partial derivatives of composite functions.
10. Extremes of functions of two variables. Conditional extremes.
11. Differential equations: First order differential equations. Solution of first order differential equations by separation of variables.
12. Homogenous, linear, Bernoulli's and exact differential equations.
13. Second order differential equations: Second order differential equations that are reduced to first order differential equations.
14. Linear second order differential equations with constant coefficients. Homogenous and non homogenous linear differential equations of the 2nd order.</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">15. Reviewing and revision.
Exercises:
1. Indefinite integrals: Standard integrations.
2. Integration by substitution. Integration using partial fractions.
3. Integration of rational and some irrational functions.
4. Integration of trigonometric functions. Defined integrals and their properties.
5. Connection between defined and non-defined integral. Improper integrals.
6. Application of defined integral: Determination areas under and between curves. Calculating arc length.
7. Calculating surface area and volume of solids of revolution.
8. Functions of several variables: Natural domain and geometrical presentation. 1st midterm exam.
9. Partial derivatives. Total differential and its application. Partial derivatives of composite functions.
10. Extremes of functions of two variables. Conditional extreme.
11. Differential equations: First order differential equations; Particular and general solution. Solution by separation of variables.
12. Homogenous, linear, Bernoulli's and exact differential equations.
13. Second order differential equations that are reduced to first order differential equations.
14. Linear second order differential equations with constant coefficients. Homogenous and non-homogenous linear differential equations of the 2nd order with constant coefficients.
15. 2nd midterm exam</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ individual assignments
☒ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Attending lectures and auditory exercises for at least 80% of provided hours. Active participation in lectures and regular attendance of midterm (midterm) exams (there are two midterm exams). Passing both midterm exams spares the student from attending the final written exam. After passing the written part of the exam the student must attend the oral exam.
In case the student does not attend the lectures regularly he or she is obligated to enrol again next year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>2,5</td><td>Oral exam</td><td>1</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
Each student must attend the written and oral exam.
Written part of the exam consists of two exams (Midterm exam during the 8th, and End of termexam during the15th week of the course) and of the final written exam (during the examination term). After passing the written part of the exam the student must attend the oral exam. In case the student has been extremely active during the lectures and is content with his or her grade of the written exam, he or she can be spared from attending the oral part of the exam. The student must achieve at least</td></tr>
</table>

50% of the maximum number of points to pass the midterm/end of term exam. The student must pass both midterm and end of term exam to be spared of attending the final written exam. If the student passes only one, he or she will be spared of that part of the curriculum in the final written exam. The grade of the written part of the exam is based on the mean value of the midterm/end of term exam points or the final written exam points (if the student did not pass the midterm exams).

The students' attendance and activity are monitored during the course and are added to the final grade of the course.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min. %)	Portion of the final grade (%)
Attendance at lectures and active participation in exercises	80 The most active students gain 5-10 points, depending of the activity.	10
Midterm exam	50	30
End of term exam	50	30
In total		70 - in this case the student can attend the oral exam

Final examination:

Elements of evaluation	Achievement (min. %)	Portion of the final grade (%)
Written exam	50	60
Oral exam	50	30
Previous activities (include all indicators of the continuous evaluation)	80	10
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
1. https://www.pfst.hr/hr/component/intranet/?view=sskolegijmaterijal		yes
2. Strang, G.: Differential Equations and Linear Algebra, Wellesley-Cambridge Press, 2014		yes
3. John Bird, Higher Engineering Mathematics 6th Edition, published by Newnes 2010. British Library		yes

	https://zodml.org/sites/default/files/Higher_Engineering_Mathematics_%28Sixth_Edition%29.pdf		
	4. Tenebaum, M. and Pollard, H.: Ordinary Differential Equations, Courier Corporation, 1985 https://www.math.brown.edu/~mgulian/morris-tenenbaum-harry-pollard-ordinary-differential-equations-copy.pdf		yes
Optional literature (at the time of submission of study programme proposal)	5. Erwin Kreyszig: Advanced Engineering Mathematics (10th Edition) Publisher: John Wiley & Sons, 2011, ISBN 978-0-470-45836-5http://www.polo.ufsc.br/fmanager/polo2016/materiais/arquivo38_1.pdf 6. M D Raisinghania, Ordinary and Partial Differential Equations, SChand Publications, 2013. 7. http://sandbox.hlt.bme.hu/~gaebor/gyakanyag/Book/Thomas'Calculus_indefinite_int.pdf		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student's attendance, Teaching process monitored by Faculty.		
Other (as the proposer wishes to add)			

4.11.2.3 Safety at Sea

NAME OF THE COURSE	SAFETY AT SEA					
Code	VPN102	Year of study	1st			
Course teacher	Ivica Pavić, Ph.D.	Credits (ECTS)	5			
Associate teachers	Jakša Mišković, M.Eng. Tino Sumić, M.Eng. Tomislav Sunko, M.Eng. Ivan Sikirica	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	3	12
Status of the course	Mandatory	Percentage of application of e-learning	20%			
COURSE DESCRIPTION						
Course objectives	Acquire knowledge to manage search and rescue operations, communications in distress, survival at sea, firefighting management, handling of a lifeboat and rescue boat, basic level of security awareness and basic principles of ship handling in crisis situations.					
Course enrolment requirements and entry competencies required for the course	Successful completion of Seamanship I.					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Understand the legal regulations of the international system of maritime safety. Put acquired knowledge into practice. Be able to design, plan and organize necessary measures for the safety of navigation. Analyze and categorize actions in difficult situations. Recognize and evaluate levels of danger. Analyze the					

	concepts of search and rescue. Pay special attention to the means of search and rescue at sea, as well as to the methods and means of survival. Pay adequate attention to radio communication equipment and procedures. Know how to use and manage firefighting systems on board, and all activities related to ship safety issues.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Introduction to the subject. International System of Maritime Safety and Security. International Conventions. Contingency Planning. 2. Management of search and rescue at sea. SAR Convention. IAMSAR Manual. Man overboard procedures. 3. Management of life-saving appliances I. LSA Code. Lifeboats. 4. Management of life-saving appliances II. Rescue boats and fast rescue boats. Boat handling equipment and handling procedures. 5. Equipment for communications in danger. Distress, safety and urgent messages. Distress signals. DSC. Abandoning of ship I. Abandoning ship arrangement, management, reporting, and announcements. 6. Abandoning of ship II. Abandoning ship and saving lives. 7. Survival at sea. Methods for collecting of survivors. Protection of persons in life saving equipment. Advanced firefighting on board I. FSS Code. 8. Advanced firefighting on board II. Principles of fire protection on ships. Means and ways of fire detection and protection. 9. Advanced firefighting on board III. Extinguishing fire arrangements, resources and procedures. Fire extinguishers and systems. Organization and training of fire teams. 10. Advanced firefighting on board IV. Firefighting hazards. 11. Advanced firefighting on board V. Supervision of firefighting procedures and maintenance of Firefighting Equipment. Ship security awareness I. ISPS Code. 12. Ship security awareness II. ISPS Code application. 13. Diving - diving safety measures 14. Principles of ship handling in crisis situations I. Principles of crew resource management in crisis situations. Principles of ship handling in crisis situations II. Allocation and prioritization of crew resources in crisis situations. 15. Principles of ship handling in crisis situations III. Navigational and ship handling procedures in crisis situations. **Exercises:** 1. Survival craft or rescue boat handling during and after launching I. The use of stowage, launching and recovery systems. 2. Survival craft or rescue boat handling during and after launching II. The use of stowage, launching and recovery systems. 3. Survival craft or rescue boat handling during and after launching III. Maintenance procedures and inspection. 4. Survival craft or rescue boat handling during and after launching III. Maintenance procedures and inspection. 5. Organization and training of firefighting teams I. Fire plans. 6. Organization and training of firefighting teams II. Firefighting training and exercises for crewmembers. 7. Organization and training of firefighting teams III.Training and exercises for crewmembers. 8. Organization and training of firefighting teams IV.Planning and conducting firefighting exercises. 9. Supervision and dangers of firefighting procedures on board. 10. Supervision of firefighting procedures on board I. Firefighting procedures on board during navigation.

<table>
<tr><td></td><td colspan="6">11. Supervision of fire procedures on board II. Firefighting procedures on board during in port operations.
12. Supervision of fire procedures on board III. Firefighting procedures on board for ships carrying dangerous goods. Inspection and servicing of systems and equipment for fire detection and extinguishing I. Personal protecting equipment.
13. Inspection and servicing of fire detection and extinguishing systems and equipment II. Rescue and salvage equipment.
14. Inspection and servicing of systems and equipment for fire detection and extinguishing III. Rescue and salvage equipment.
15. Inspection and servicing of systems and equipment for fire detection and extinguishing IV.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☒ field work</td><td colspan="3">☐ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures and exercises are obligatory; there is a record of attendance.
To obtain a specific certification min 95% of attendance at lectures and 1000% of attendance at exercises is required.
To obtain a signature min 85% of attendance at lectures and 100% of attendance at exercises is required. In case a student fails to acquire minimal hours of attendance, student will not get a signature and accordingly has no right to apply for the exam. All other students, i.e. students with less than 80% of attendance have no right to signature and must enrol in the course again next year.
No absentee notes can justify or replace attendance.
In case of sickness or any other justified reason, students who have more than 80% of attendance, but do not have 100 (95)% attendance of special course training, can get extra hours in other, additional terms during semester or later, but not later than one month after regular teaching part of semester.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Practical training</td><td>1.5</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Two mid term tests are organized during the semester. The first mid term test covers lectures 1 to 7 and is taken in week 8 of the lectures. The second mid term test covers lectures from 8 to 15 and is taken in week 15 of the lectures. To pass the test, one must have at least 50% of the points. In order to take the second mid term test a student should not have to pass the first one.
If a student does not pass one mid term test and realizes the right to sign, he/she can take the written exam only the part that he/she did not pass. Taking the exam in this way is valid until the end of the exam deadlines in the current academic year. Students who do not pass the mid term test but fulfil all obligation, can take the written exam during the exam.</td></tr>
</table>

Students who have passed the exam via mid term tests must register for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture /practical work attendance	80/95/100	10
Midterm exam 1	50	40
Midterm exam 2	50	40
Practical work	100	10
Total		100 (students exempt from taking oral examination)

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
House, D. J., Marine Survival, 3rd Edition, Witherby Seamanship, Edinburgh, Scotland, 2011	1	Yes
IMO: SOLAS, Consolidated Edition 2018, IMO Publishing, London, United Kingdom 2018	1	Yes
IMO: IAMSAR MANUAL, International Aeronautical and Maritime Search and Rescue Manual, 2016 Edition, Vol. 3 Mobile Facilities, IMO Publishing, 2016	1	Yes
The Naval Handbook for Ship Firefighters, 8th Edition, The Nautical Institute, London, 2006	1	Yes
The Naval Handbook for Survivors, 3rd Edition, The Nautical Institute, London, 2007	1	Yes
IMO: Guide to Maritime Security and the ISPS Code, 2012 Edition, IMO Publishing, 2012	1	Yes

Optional literature (at the time of submission of study programme proposal)	1. IMO: Life-Saving Appliances including LSA Code, 2017 Edition, IMO Publishing, 2017 2. IMO: IAMSAR MANUAL, International Aeronautical and Maritime Search and Rescue Manual, 2016 Edition, Vol. 1 Organization and Management, IMO Publishing, 2016 3. IMO: IAMSAR MANUAL, International Aeronautical and Maritime Search and Rescue Manual, 2016 Edition, Vol. 2 Mission Co-ordination, IMO Publishing, 2016 4. Pike, D., Launch and Recovery of Boats from Ships, The Nautical Institute, London, 2018 5. IMO: FSS Code, International Code for Fire Safety Systems, 2015 Edition, IMO Publishing, 2015 6. Ritchie, G., Onboard Safety, Witherby Seamanship, Edinburgh, Scotland, 2011
Quality assurance methods that ensure the acquisition of exit competences	University survey, List of student attendance, Faculty teaching supervision
Other (as the proposer wishes to add)	

4.11.2.4 Sea and Marine Environment Protection

NAME OF THE COURSE	**SEA AND MARINE ENVIRONMENT PROTECTION**					
Code	VPN103	Year of study	1st			
Course teacher	Merica Slišković, Ph.D.	ECTS	2			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	0	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Pollution of the marine environment from vessels. Defining potential sources of pollution. Pollution prevention and taking appropriate measures if pollution is detected. Adoption of the provisions of the MARPOL Convention 73/78 and legal regulations.					
Course enrolment requirements and entry competencies required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Identify the types and characteristics of pollutants, and assess effects of pollution to the marine environment and human life. Categorize the Most Common Sources of pollution from ships and describe prevention measures to prevent pollution of the marine environment.					

<table>
<tr><td></td><td colspan="6">Interpret the basic content of the International Convention on Marine Pollution 73/78 and its annexes (MARPOL Annexes I - VI), and the most important international regulations on the prevention of pollution from ships (applies to machinery spaces, cargo, ballast tanks).
Connect actions against pollution with the necessary equipment.
Discuss the purpose of regional cooperation in preventing pollution, preparedness and appropriate response to an incident of pollution - Subregional Plan.
Interpret Intervention Plan (SOPEP) and give a brief description of the main elements that will be included in SOPEP (Article 26 of Annex I of MARPOL).</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">1. Introduction to the subject. Pollution / contamination of the sea.
2. Pollution / contamination of the sea as a result of human activities
3. Ship as a source of pollution of the marine environment.
4. Prevention of Pollution from Ships - MARPOL Convention 73/78
5. Annex I - Prevention of oil pollution from ships
6. Oil water. Ships certificate and books. RH Maritime code.
7. SOPEP – Ship Oil Pollution Emergency Plan: Compulsory and optional requirements.
8. Appendix II - Prevention of Pollution by Noxious Liquid Substances
9. Annex III - Prevention of pollution by harmful substances, which are transported by sea in packaged form
10. Annex IV - Prevention of pollution by sawage.
11. Annex V - Prevention of pollution by garbage from ships
12. Marine litter.
13. Annex VI - Prevention of air pollution from ships.
14. Prevention of Marine Pollution by ballast water.
15. Contingency Plan for Accidental Marine Pollution in the Republic of Croatia.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☐ exercises
☐on line in entirety
☒ partial e-learning
☐ field work</td><td colspan="3">☐ individual assignments
☒ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Students must attend lectures. Their presence shall be registered and kept in a record.
In order to get the signature, students must attend at least 80% of the lectures
In case of insufficient attendance, the students will not be granted a signature and shall be obliged to enrol in the course the following year.
Students may take the oral part of the exam through continuous evaluations during the semester, by taking two mid term tests.
Students who do not pass the mid term test and have obtained the signature must take the written exam during the exam period.
Using e-learning material, students may study the given topics individually or as a team.
Students who have passed the exam via mid term tests must register for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.</td></tr>
<tr><td rowspan="4">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is</td><td>Class attendance</td><td>0.7</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>e-learning</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm exam</td><td>1.3</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
</table>

<table>
<tr><td>equal to the ECTS value of the course)</td><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Class attendance is compulsory for regular students and a precondition for obtaining a signature is attendance at 80% of the lectures.
Mid term tests are organized during the semester. The first mid term test covers lectures 1 to 6 and is taken in week 7 of the lectures. The second mid term test covers lectures from 7 to 14 are organized at the end of the class.
The example questions are at the end of all lectures.
To pass the test, one must have at least 50% of the points. Students who for objective reasons do not take the mid term test or do not pass the minimum, have to repeat the exam.
In order to take the second mid term test a student should pass the first one.
The final mark is given based on presence at lectures and on the mid term test. Students who do not take the mid term test during the semester but have been granted a signature may take the written exam in the exam period. The same rules and criteria apply for the exam period evaluation as for continuous knowledge testing.

Continuous evaluation of students' performance

<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance at lectures and active participation in exercises</td><td>80</td><td>10</td></tr>
<tr><td>Midterm exam I</td><td>50</td><td>45</td></tr>
<tr><td>Midrem exam II</td><td>50</td><td>45</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table>
Final examination
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Test or mid term test (written)</td><td>50</td><td>30</td></tr>
<tr><td>Theory test (written test)</td><td>50</td><td>50</td></tr>
<tr><td>Previous activity (including all continuous test indicators)</td><td>100</td><td>20</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
</table>
</td></tr>
</table>

	65-79	Average success with noticeable mistakes	Good (3)
	80-89	Above-average success with few mistakes	Very good (4)
	90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	1. MARPOL Convention, 1973/78.	5	YES
	2. SOLAS Convention, 1974 (Chapter VII)	3	YES
	3. Slišković, M.: lecurers notes (+on line CBT)		YES
Optional literature (at the time of submission of study programme proposal)	1. Andersson K. et al.: Shipping and environment, Springer-Verlag Berlin Heidelberg, 2016. 2. Karim S.: Prevention of pollution of the Marine Environment form the Vessels, Springer International Publishing Switzerland, 2015. 3. Bićanić, Z.: Zaštita mora i morskog okoliša, Split, 2003.		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.2.5 Seamanship II

NAME OF THE COURSE	SEAMANSHIP II						
Code	VPN104	Year of study	1st				
Lecturer	Danijel Pušić, M.Eng.	ECTS	4				
Associate lecturers	Boris Kero, M.Eng. Tomislav Sunko, M.Eng. Jakša Mišković, M.Eng.	Teaching methods (number of teaching hours per semester)	L	S	Ex	FW
			45	0	45	0
Course status	Mandatory	Percentage of application of e-learning	20%			
COURSE DESCRIPTION							
Course objectives	Acquiring basic terms related to ship construction, ship stability, cargo loading and stowing, supervision of cargo loading, stowing, securing and discharging, cargo watch during the voyage. Being familiar with the ship maintenance procedures, emergency procedures and with mooring, unmooring and anchoring techniques. Contribution to the maritime safety through awareness of potential threats. Understanding the work organization on the Croatian warships. Acquiring skills						

	necessary for handling small boats, sailing boats and fast rescue boats, their maintenance and operating procedures in emergencies.
Enrolment requirements and entry competences required for the course	Successful completion of Seamanship I
Course-level expected learning outcomes (4 to 10 learning outcomes)	- Explain the basic terms related to ship construction and stability. Describe ship's behaviour in waves. - Become familiar with different types of cargoes transported by sea, cargo stowing and securing techniques. - Describe and explain the procedures of search and rescue at sea, use emergency signals at sea. - Independently operate small boats, motorboats, sail and oar boats. - Apply International Regulations for Preventing Collisions at Sea. - Apply safety measures and procedures on board and in ports. - Understand the specifics of the Croatian Navy ship organization. – - Confirm the procedures in case of accidents at sea involving small vessels. - Operate a fast rescue boat in search and rescue procedures and generally in need of rapid transportation of people and goods. - Demonstrate survival and rescuing people from the sea techniques, administer first aid. - Describe and explain the ship and ship's equipment maintenance techniques.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1-2. Maintaining the ship in a seaworthy condition - ship's stability, displacement, buoyancy , FWA, static stability, initial stability, angle of heel, static stability curve, shift of centre of gravity, free surfaces, trim, etc. Stability of a ship in damaged and undamaged condition. 3. Become familiar with different types of cargo transported by sea; the cargo stowing and securing techniques. Supervision of loading, stowing, securing and discharging of cargoes, cargo watch during voyage. Different types of cargo – liquid gases, chemicals, containerized cargoes, bulk, and grains as dry bulk cargo, dangerous goods, heavy cargo, and deck cargo. Bill of Lading and stowage plan. 4. Ship manoeuvring: introduction, the concept of the division, influence of geometric and structural characteristics on ship's manoeuvrability, turning point of a ship, interaction with other ships, squat effect, shallow water impact, interaction with the coast, analysis of coastal impact on the ship manoeuvring 5. Ship manoeuvring: types of propulsion and manoeuvring devices, impact analysis, and screw. Screw operation and its impact on the ship manoeuvring characteristics, rudder and rudder operation, thruster operation and its impact on the ship, ship manoeuvring equipment, and impact on manoeuvrability features of the ship, ship manoeuvring characteristics. 6. Basic techniques of manoeuvring the ship; mooring, unmooring, anchoring. Manoeuvring in emergency. IMOSAR. 7. Diving 8. Boat manoeuvring: Rowing and sailing techniques. 9. Introduction to the construction and propulsion systems of fast motor boats. Handling rescue and other boats equipment. Launching and hoisting fast motor boats, protection. Fast motor boat management techniques. Preparing the boat for launching and hoisting, launching and hoisting. Operating fast motor boats. Manoeuvring a fast motor boat in all conditions. Mooring to another vessel.

	Coordinated search and rescue. Pulling people out of the sea and first aid administering. The techniques of survival at sea. 10. Collision Rules 11. Basic sea wave theory, ship behaviour and manoeuvrability 11-12. Work organization, chain of command, rights and duties on the Croatian Navy warships. 12-13. Management in emergencies: measures providing the protection and safety of passengers in emergency situations, action plan in emergencies, measures and procedures after going aground, procedures after collision, fire or explosion. Abandon ship procedures, equipment and steering procedures in emergencies, towing and towing equipment, rescuing people and ship in distress, procedures for helping a ship in distress. 13-14. International and national watchkeeping regulations. Watchkeeping at sea. Principles, organization, shifts. Watchkeeping at anchorage, in ports and in emergency situations. Principles, organization, shifts. Safety protection of ports. Safety protection of ships. Officer responsible for ship safety protection. Work organization, chain of command, rights and duties on the Croatian Navy warships. 14-15. Maintenance of the ship: ship maintenance approach, principles and procedures for ship maintenance, general maintenance of shipboard systems, maintenance of the ship's hull and equipment, maintenance of holds, decks and shell plating, 15. Maintenance of the ship: preparing surfaces for coating, coating characteristics, coating application, cargo handling equipment maintenance. Undertaking regular security inspections of the ship. **Exercises:** 1. Basics of ship's stability: reading curve of static stability, elements of ship's stability. 2-3. Basics of cargo handling: types of cargo, cargo handling gear, dangerous goods, cargo securing. Basics of ship maintenance: ship maintenance, maintenance of ship systems, hull and equipment, a visit to the shipyard/port. 4. Steering and ship manoeuvring while underway. 5. Basic techniques of ship manoeuvring: mooring, unmooring, anchoring. 6. Special cases of manoeuvring: in traffic separation zones and VTS system areas, docking manoeuvres, entering and leaving the locks, passage under bridges, in bad weather, ice navigation. 7. Manoeuvring in emergencies: "Man Overboard" manoeuvre, rescue manoeuvres, imminent collision, inevitable grounding, intentional grounding, re-float, and fire on board, emergency steering, emergency towing, and manoeuvring analysis. Search and rescue, usage of IMOSAR. 8. Boat manoeuvring, rowing and sailing; mooring and unmooring with or without machinery, hoisting and launching. 9. Boat manoeuvring, rowing and sailing, sea voyage, towing, pulling people out of the sea and giving first aid. Survival at sea techniques 10. Diving 11. Boat manoeuvring, rowing and sailing, sea voyage under special circumstances, towing, pulling people out of the sea and giving first aid. Survival at sea techniques.

<table>
<tr><td></td><td colspan="6">12. Fast rescue boats manoeuvring techniques. Preparation of a boat for launching and hoisting. Launching and hoisting.
13. Fast motor boats manoeuvring in all conditions.
14-15. Handling fast boats in search and rescue operations, mooring to other vessels, coordinated search and rescue, pulling out people from the sea, maintenance of a boat and its equipment.
15. Identification of weapons, dangerous substances and devices, awareness of the damage they might cause. Basic knowledge of communication and data procedures related to security. Basic knowledge of training requirements, drills and exercises based on relevant conventions, regulations and IMO newsletter, including those relevant to piracy and robbery prevention.</td></tr>
<tr><td>Teaching methods</td><td colspan="3">☒ lectures
☐ seminars and workshops
☐ exercises
☐ on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student obligations</td><td colspan="6">Lectures and exercises are obligatory; there is a record of attendance. To obtain a signature min 80% of attendance at lectures and exercises is required, for specific course training minimum is 100 (95) %. In case a student fails to acquire minimal hours of attendance, student will not get a signature and accordingly has no right to apply for the exam.</td></tr>
<tr><td rowspan="5">Monitoring student performance (write the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td>1</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/End of term exams</td><td>2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Assessing and evaluating student performance in class and at final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
Lectures and exercises are obligatory; there is a record of attendance. To obtain a signature min 80% of attendance at lectures and exercises is required, for specific course training minimum is 100 (95) %. In case a student fails to acquire minimal hours of attendance, student will not get a signature and accordingly has no right to apply for the exam.
No absentee notes can justify or replace attendance. In case of sickness or any other justified reason, students who have more than 80% of attendance, but do not have 100(95)% attendance of special course training, can get extra hours in other, additional terms during semester or later, but not later than one month after regular teaching part of semester.
All other students, i.e. students with less than 80% of attendance have no right to signature and must enrol in the course again next year.</td></tr>
</table>

Continuous evaluation of students' performance:

Elements of evaluation	Level of success (min.%)	Portion of the final grade (%)
Class attendance (lectures+exercise)	80/100	20
Midterm exam	50/75	70
E-learning	100	10
Total		100

Grading nad evaluation of student work during classes and final exam

1st Midterm exam/ 7th week

2nd Midterm exam /14th week

Midterm exams dates are not in the lecture schedule, ie they are not planned as part of the class. Midterm exams are written only once. If a student passes both midterm exams he is exempted from writing the written part of the exam. If a student passes one midterm exam and the other fails the written part of the exam, he is released from the part he passed through the midterm exam.

Midterm exams (parts of final exam) are available only during class attendance period, and final exam only during examination period at the end of semester. Requirement for the 2nd midterm exam is passing the 1st midterm exam. If a student passes the 1st midterm exam, and does not pass the 2nd midterm exam, and acquires the right to sign, it is valid only until the end of the academic year. It means that student will need to pass only the midterm exam that he didn't pass, during final examinations.

The written exam from theory is valid until the end of the academic year, ie the end of the corresponding deadlines. Students who re-enrol in the course in the following year are not recognized for parts of the exam. Time of writing the total exam (written): up to 1 school hour. The time of writing a midterm exam form theory (only during classes) is: up to 1 school hour. Students who do not pass the course through the midterm exams take the final written exam. The requirement for other students to take final examination is signature.

Continuous evaluation of students' performance

Elements of evaluation	**Achievement (min.%)**	**Portion of the final grade (%)**
Exam or midterm exams	50/100	60
Previous activities (including any indication of continuous assessment)	100	40
In total		100

Grading scale:

Percentage points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above average success with few mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

	Title	**Copies available in the library**	**Availability via other media**
Required textbooks and reading material (available in the library and via other media)	Swadi, D.: "Cargo Notes, 2nd Edition", Witherby Seamanship, Edinburgh, Scotland, 2009	1	Yes
	"21st Century Seamanship", Witherby Seamanship, Edinburgh, Scotland, 2015		Yes
	House, D.J.: "Seamanship Techniques, 3rd Edition'', 2004, Elsevier Ltd.(https://anzaliport.pmo.ir/pso_content/media/digitallibrary/2013/1/book13/13.pdf)		Yes
	Cockroft, A. N., Lameijer, J. N. F.: "A Guide to the Collision Avoidance Rules, 7thEdition", Butterworth-Heinemann, Oxford, United Kingdom, 2012		Yes
	Barrass, B, Derrett, D.R.: Ship Stability for Mastersand Mates, 6thEdition - Consolidated 2006, Butterworth – Heinemann for Elsevier, Oxford, United Kingdom, 2006		Yes
	IMO: ''Guide to Maritime Security and the ISPS Code, 2012 Edition'', IMO Publishing, 2012		Yes
Optional textbooks and reading material (at the time of submission of study programme proposal)	Williamson, P.: Ship Manoeuvring Principles and Pilotage, Witherby Seamanship, Edinburgh, Scotland, 2013		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching inspection		
Other (as the proposer wishes to add)			

4.11.2.6 Marine Electrical Engineering and Electronics I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">MARINE ELECTRICAL ENGINEERING AND ELECTRONICS I</td></tr>
<tr><td>Code</td><td>VPE101</td><td>Year of study</td><td colspan="3">1st</td></tr>
<tr><td>Course teacher</td><td>Danko Kezić, Ph.D.</td><td>Credits

(ECTS)</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ivica Kuzmanić, M.Sc.
Dean Sumić. M.Eng.
Ante Gelo, M. Eng.</td><td>Type of instruction

(number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3">10</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Mastering of basic laws of direct electric current circles, electrostatics, and magnetism, applicable to other study courses and practical work aboard.
Physical properties of all materials used in electrical engineering devices and systems, as well as their components, are studied. Particular attention will be paid to the application of aquired knowledge and competences in the work of shipboard electric devices and systems.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">Upon successful completion of this course the student will be able to:
• Define and use all the laws of direct, electrostatic, and magnetic current circuits.
• Analyse and calculate complex electric, electrostatic, and magnetic circuits.
• Plan and perform measurements in electric current circuits.
• Master all essential / relevant safety measures in working with electric current
Examine inflence of amrine environment to electrical, construction and other materials used in electrical/electronic products.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. Introduction. Structure of matter. Ionization. Physical properties of materials in electrical engineering. Division of materials.
2. Electrical current. Effects of the electrical current. Superconductivity. Physiological body reactions to electrical current stress. Basic electrical units.
3. Electrical resistance – dependence on temperature and material. Resistors. Resistors colour code. Rheostat and potentiometer. Resistance measurement.
4. Direct current circuit: fundamental laws (Ohm's law, Kirchhoff's current and voltage laws). Application of basic laws.
5. Operational regimes of electrical sources: open circuit and short circuit. Sources connections. Resistors and conductivity connections. Voltage and current divider rules. Real and ideal measurement instruments.
6. Linear circuits' analysis: branch, node, loop, mesh. Resistive (linear) networks analysis of DC complex circuits.</td></tr>
</table>

	7. Energy conversation. Action, power, efficiency. Maximum power transfer theorem. Joule's law. Applications of Joule's law (heaters, melting fuses, bimetals, electric bulbs). Measurement of power and action. 8. Electrostatics: Coulomb's law, electric field, Gausse's law. Electrical influence. Dielectric's polarization. Dielectric strength. Electric charge distribution in conductors. Electric potential. Static and atmosphere electricity. 9. Electrical capacity. Capacitors – types, connections, multilayer dielectric, refraction law, transient phenomena, electrostatic energy. 10. Current flow through gases and liquids. Electrolyte. Faraday's laws of electrolyze. Phenomenon on electrode interface – electrolyte. Polarization voltage. Electroplating. Galvano-plastics. 11. Chemical sources of DC: primary, secondary. New types of batteries. Application, position, and maintenance of shipboard electric chemical sources. 12. Magnetism: Basic magnetic quantities and laws. Magnets and electric magnets. Earth's magnetism. Magnetic field effects, declination and inclination, magnetic field, flow, density. Magnetic field of flat conductor and coil. Permeability. Ohm's law for magnetic circuits. 13. Ampere's law. Biot-Savart's law, law of electromagnetic induction, movement voltage, rotation voltage, self-induction, mutual inductance. Inductivity in current circuit. 14. Magnetic field forces. Magnetic field energy. Eddy currents. Classification of materials according to magnetic properties. 15. Ferromagnetic materials. Ferromagnetic materials. Hysteretic dissipation. Dissipation of eddy currents. Ship's magnetic field. **Exercises:** 1. Safety measures in laboratory. Influences of electric current to human body. 2. Batteries. 3. Recognition of electronic components. Procedure of soft soldering. 4. Recognition of various ship's cables. 5. Measurement of current and voltage by digital and analogue instruments. 6. Calculating middle complex linear resistive networks. 7. Application of Kirchhoff's laws in laboratory. 8. Wheatston's bridge. Resistance measurement and colour code. 9. Calculus of simple resistive networks. 10. Measurement of mesh currents. 11. Calculus of directs application of Kirchhoff' laws in circuit analysis. 12. Circuit analysis by superposition principle. 13. Calculation of networks by network theorems (Thevenine, Norton and Millman). 14. Power measurement in DC circuits. 15.Serial, parallel, and hybrid capacitor circuits at DC.	
Format of instruction:	x lectures ☐ seminars and workshops x exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ individual assignments x multimedia x lab exercises ☐mentoring ☐ (other)
Student responsibilities	Students have to attend 80% of lectures and 100% of laboratory exercises in order to obtain the course teacher's signature. Students must make up for missing exercises if they do not fulfil the requirements in regular lecture calendar. If not, they have to enrol again in the course the next academic year. Students, who obtain	

<table>
<tr><td></td><td colspan="6">enough points, have to apply for examination by WEB service (“Studomat”) for the first examination term.Students who do not pass midterm exams, have to take the final exam.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work (lab.)</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm exams</td><td>3</td><td>Oral exam (alt.)</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam (alt.)</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Students need to obtain sufficient points to pass. They have to attend 80% of lectures and 100% of lab exercises.
There are three midterm exams (tests). The first one tests the material from 1st to 4th week and it is written in the 6th week. The second midterm exam covers materials from 5th to 9th week and it is written during the 9th week. The third midterm exam covers material from the rest of the semester and it is written in the last week of the semester.
Examples of exams and exam questions are available at the Faculty WEB. Minimal requirement for every midterm exam is 40 % of maximum points.
Students can retake the midterm exam if they could not attend the first time due to objective reasons or if they have not passed one of the midterm exams.
Students who do not pass midterm exams, are obligated to take the final exam in the examination term.

Continuous evaluation of students' performance

<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance at lectures and active participation in exercises</td><td>80 (100)</td><td>10</td></tr>
<tr><td>Midterm exam I</td><td>40</td><td>30</td></tr>
<tr><td>Midterm exam II</td><td>40</td><td>30</td></tr>
<tr><td>Midterm exam II</td><td>40</td><td>30</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Practical test (written)</td><td>40</td><td>45</td></tr>
<tr><td>Theory test (written test)</td><td>40</td><td>45</td></tr>
<tr><td>Previous activity (including all continuous test indicators)</td><td>100</td><td>10</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table>
</td></tr>
</table>

Grading scale

Points (%)	Criterion	Grade
0-39	Does not meet minimum criteria	Fail (1)
40-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Lessons in Electric Circuits, allaboutcircuits.com/textbook vol.1: DC		Web site
	K.P. Mohandas, Basis of Electrical Enginering, ECReference Books		YES
	Bharti Dwivedi, Fundamentals of Electrical Engineering, Wiley India, 2019. ISBN: 9788126542710		YES
	G. Rizzoni, Fundamentals of Electrical Engineering, McGraw-Hill, 2009.		YES
Optional literature (at the time of submission of study programme proposal)	1. R. C. Dorf, The Electrical Engineering Handbook, Chapman & Hall/CRCnetBASE, New York, 2009. 2. G. Rizzoni, J. Kearns, Principles And Applications of Electrical Engineering, 5th edition, Mcgraw Hil, 2015. 3. I. Vujović, I. Kuzmanić, Z. Kulenović, Dielectric Materials' Selection for Marine Applications, LAP LAMBERT Academic Publishing, Saarbrücken, Germany, ISBN 987-3-659-59822-7, 2014. 4. J. Payne: The Marine Electrical & Electronics Bible – A Practical –handbook for Cruising Sailors, Adlard Coles Nautical, London, 2007. 5. H. D. McGeorge: Marine Electrical Equipment and Practice, Butterworth-Heinemann, 1993, 2nd edition, 2014. 6. J. Bird: Electrical circuit theory and technology, Elsevier 2002, 2nd revised edition, London, Oxford, New York, Paris, 2003. 7. A. S. Morris: Measurement & instrumentation principles, Butterworth-Heinemann, 3rd edition 2001 8. E. Sherman: Powerboater's Guide to electrical systems: maintenance, troubleshooting, and improvements, International Marine 2000, 2nd ed. 2007. 9. E. Sherman: Advanced marine electrics and electronics troubleshooting: a manual for boat owners and marine technician, International Marine, 2007.		
Quality assurance methods that ensure the acquisition of exit competences	University questionnaire, student evidence list, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.2.7 Military Management

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">MILITARY MANAGEMENT</td></tr>
<tr><td>Code</td><td>VPO143</td><td>Year of study</td><td colspan="3">1st</td></tr>
<tr><td>Course teacher</td><td>Dario Matika, Ph.D
Luka Mihanović, Ph.D</td><td>Credits (ECTS)</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Mirko Šundov, Ph.D
Marijan Kostanjevac, M.Sc.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for all students</td><td>Percentage of application of e-learning</td><td colspan="3">20%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objective</td><td colspan="5">This course is oriented towards management activities that organization leaders need in order to efficiently manage resources of the organization. Students will learn how management functions, planning skills and achievement of goals, time and stress management, group decision making, problem solving and leadership challenges are applied in commanding process. Illustration and analyses of the theoretical concepts, through the analyses of the relevant situations within environment of the manager/commander from civilian and military field (case study method), provides opportunity for students to develop their own skills for an effective commanding a unit at the tactical level.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. To understand hierarchy of the chain of command in organization and interrelation of the authority, responsibility and accountability towards superiors.
2. To understand importance of the organizational structure and creating organizational units.
3. To understand approach to the “Mission Command” philosophy
4. To understand the functions of management and their importance in the commanding process.
5. To be familiar with the techniques and skills necessary in planning and decision making.
6. To be able to establish meaningful objectives and priorities, to manage time, resources and personnel.
7. To be able to create working groups based on task requirements, capability of the group and available means.
8. To analyze the role of cohesion, communication and motivation in a group and team.
9. To understand the relation between setting objectives and feedback information and to adequately establish the system of control.
10. To understand the interdependence of commanding, leadership and management for the purpose of effective management of the military organization.</td></tr>
</table>

Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. **Introduction into the course, 1 -** course objectives, topics, learning outcomes, student obligations, assessment and grading. 2. **To understand management in a military organization, 2 -** relation of the function of the management, leadership and execution in a civilian and military organization; legal bases for commanding *(the Constitution, Defense Act, Service Act)* the basis of leadership and commanding in Croatian Armed Forces, *(ZDP-1 Doctrine).* 3. **The purpose of organizing and creating organizations, 4 -** purpose and importance of the organizations; classical and modern principles of organizing; organization as a system; evolution of the organization's development (civilian and military) from industrial to information era; components of the structure and forms of the organizational structures; change of the organizational pattern; interest groups of the society and their expectations. 4. **Managing/leading an organization, 2 -** who are managers?, what do they do? and where do they work?; functions of management in organization; application of the principles of efficiency, levels, roles and required skills for managers; 5. **Principles of military establishment of the organization, 3 -** principles of establishment *(unity of command – clear chain of command, the range of control, integrity of units, delegating and decision making, separating command function from staff functions)*; classical organizational structure of the military organization; command post*(the role of commander and staff),* organizing units for conduct of the mission, the continuity of command and control. 6. **Commanding military organization, 3 -** authority and responsibilities, approach of the philosophy of commanding: *"Mission Command" (Auftragstaktiks)*, art of commanding and control requirements, the system of command and control. 7. **Commander's knowledge and skills for management, 3 -** relation between manager/commander in an organization (civilian/military); levels, roles and necessary skills of the manager/commander; use of the principles of effectiveness and efficiency in a military organization. 8. **Military view on management in the past and nowadays, 3 -** overviewof the basictheoretical approaches –management focus; comprehensiveness of the management. 9. **Application of the managerial techniques in planning, 3 -** what is planning? Establishing objectives and developing plans, planning process, planning tools and techniques. 10. **Employment of managerial techniques in military decision making, 3 -** identify a problem, choosing a solution and assessing effectiveness, styles of decision making, steps in military decision making, ethics of making decisions in a military context. 11. **Managing organizational changes, 3 -** causes of changes on organization *(structure, technologies and personnel), c*ommander/manager and managing changes, self-management, stress and innovations, time management. 12. **Understanding the function of leadership and management in military organization, 4 -** **a.** understanding individual *(behavior and personality)* and group behavior, **b.** team work *(team building, types of teams, characteristics of successful teams)*, managing teams. 13. **Understanding communication process in a military organization, 2 -** understanding communication, communication process, obstacles in communication, organizational communication, communication and information technology, development of communication skills. 14. **Dependence of effective management on leadership and trust, 2 -** interrelation of the type of power and employing methods of influence of the ship's commander, theories of leadership, models of leadership in commanding, new approaches in leadership development. 15. **Control/supervision – the function of managing a military organization, 2** - what is control?Importanceof control for commander, how to carry out the controlling process? *(objectives and standards, effectiveness of the existing measures, comparison*

	of results with objectives/standards, correction of activities for achieving standards), tools and techniques of control. 16. **Commanding, management and leadershipin leading military organization, 2 -** theinterdependence of leadership, management and commanding, the role of commander as a leader and manager, importance of developing commander's managerial and leadership skills. **Exercises:** 1. Comparison of the function of management, leadership and execution in civilian and military organization. 2. Case study, - *"Creating added value for the organization"* 3. Advantages and disadvantages of various forms of organizational structures 4. Relations between authority, responsibility and accountability towards superior officer (Commander of the ship). 5. Examples of creating task forces *(TF- equivalent of the company).* 6. Study case of the "Mission Commanding" philosophy. 7. After Action Report according to principles of efficiency and effectiveness. 8. Study case of managing training by objectives 9. Example of solving military problem in seven steps. 10. Case study of team work and group work. 11. Case study, analyses of poor communication example. 12. Case study *"I do not have enough time",* planning one's own schedule *(weekly, monthly).* 13. Standards, SOPs (ship). 14. Case study, activities of the managers i.e. leaders (in small company /platoon). 15. Guest lecturer *"*Managing own career*"* .
Format of instruction:	☒ lectures ☐seminars and workshops ☒exercises ☐on-line in entirety ☒partial e-learning ☒field work ☒individual assignments ☐multimedia ☐lab exercises ☐mentoring ☐other
Student responsibilities	Students are required to attend lectures and exercises. In order to obtain a signature, students must have 90% attendance in lectures and exercises. In case of lower attendance in classes, students will lose their right to obtain a signature and possibility to take an exam. The final grade in practical training includes the grade in seminar attendance, consulting the seminar reading materials and active participation in seminar discussions. Students who pass the two mid-term exams and have regular (90%) attendance in practical training are not required to take the oral exam. The final passing grade will be given only if all elements of evaluation have been successfully achieved. Absentee notes cannot justify absence from the class. Students who haven't met the necesary requirements to obtain a signature due to illness or some other justified reason and lack up to 20% of regular attendance in lectures and exercises, may be provided consultations and given additional assignments. All other students, i.e. those with less than 50% class attendance, lose the right to obain a signature and are required to enroll this course next year.

Screening student work *(name the proportion of ECTS credits for each activity so that the total*						
	Class attendance	1	Research		Practical training	1
	Experimental work		Report		Self-study and homework	

number of ECTS credits is equal to the ECTS value of the course)					assignments (other)	
	Essay		Seminar paper		(other)	
	Mid-terms	1	Oral exam	1	(other)	
	Written exam		Project		(other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

There are two exams – a Midterm and End of term exam .
If sudents fail midterm/end of term exams, they are required to take an oral exam.
If they pass midterm/end of term exams, they get an average grade.
Students must have 90% attendance in lectures and exercises in order to obtain a signature.

Continuous evaluation of the students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance and active participation in exercises	90	20
Midterm exam	50	30
End of term	50	30
Exercises and seminar discussions	60	20
Total		100

Final exam:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	90	20
Oral exam	50	80
Total		100

Grading scale :

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above-average achievement with a few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	NATO publications:		Yes

	• AJP-3.1, • AJP-3(B) • AJP-01(D);		
	Carlson Thomas J. *Leadership and Management*, Boston, MA: Pearson Custom Publishing, 2000.		Yes
	Daft&Maricic; *Building Management Skills: An Action-First Approach,* 2013.		Yes
	Richard L. Daft, *Management,* 12th edition, 2015.		Yes
Optional literature (at the time of submission of study programme proposal	- GaryYukl, Leadership in organization, Pearson; 8 edition, 2012. - Michael Abrashoff, *It's Your Ship: Management Techniques from the Best Damn Ship in th eNavy,* 2012 *(recommended reading)* - Shamir, E., *Transforming Command: The Pursuit of Mission Command in the U.S., British, and Israeli Armies*, Stanford Security Studies, 2011 - Stavridis J., *The Accidental Admiral: A Sailor Takes Command at NATO***,** 2014. - Ulmer Walter F. , *Leaders, Managers, and Command Climate, 2009.*		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.2.8 On-board Training I

NAME OF THE COURSE	**ON-BOARD TRAINING I**					
Code	VPN105	Year of the study programme	1st year			
Course teacher	Jakša Mišković, M.Eng. Tino Sumić, M.Eng.	Credits (ECTS)	2			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	0	30
Status of the course	Mandatory	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	The main objective of this course is to acquire practical knowledge and skills of ship handling in all conditions and gain experience of living and working on board a ship.					
Course enrolment requirements and entry competences required for the course	Sucessful compeltition of Seamanship I and II, Safety at sea, Maritime English I and II					
Learning outcomes expected at the level	1. Acquiring skills for working on deck, familiarization with procedures of maintaining a ship, activities in case of emergency, measures of protecting the sea and the marine					

<table>
<tr><td>of the course (4 to 10 learning outcomes)</td><td colspan="6">environment, familiarisation with proper procedures of handling a lifeboat and a life raft, firefighting equipment and other rescue equipment.
2. Participation in keeping a navigational watch and communication procedures and practical use of navigational and communication instruments and devices.
3. Learning how to be an active member of the crew in daily practices and maintain the ship and ship systems. .Participation in regular ship’s procedures such as berthing, unberthing, navigation, ship's stay in port, etc.
4. Gaining experience of living and working on board ship, within the ship’s crew in a limited ship’s space
5. Familiarisation with ship's proper log book record and doing ship paperwork in a proper way.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Exercises:
1. Procedures of organizing the ship's crew at sea and in port according to SOLAS manual.
2. Using and maintaining navigational and communication instruments and devices.
3. Preparing, starting and maintaining the ship's propulsion system
4. Berthing and unberthing a ship, anchoring a ship, handling marine ropes and steel cables
5. Regular and emergency steering gear
6. Applying International Regulations for Preventing Collisions at Sea
7. Maintaining bridge communication procedures, both in Croatian and English.
8. Calculating ship cargo plan, lashing and securing cargo,
9. Handling deck equipment and other means for loading / discharging cargo operations.
10. Maintenance of a ship and ship equipment.</td></tr>
<tr><td>Format of instructions</td><td colspan="3">☐ lectures
☐ seminars and workshops
☐ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student obligations</td><td colspan="6">Student obligations
Mandatory 100% attendance, log keeping. Students who do not achieve 100% attendance, ie. miss boarding the school ship are required to re-enroll in the course next year. The schedule and program of the Navigation Practice are realized during boarding on a school or some other appropriate ship, within a 24-hour stay on the ship for a minimum of 5 days.</td></tr>
<tr><td rowspan="6">Screening student work (enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0.7</td><td>Research</td><td></td><td>Practical training</td><td>1.3</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td colspan="2">Written exam</td><td colspan="2">Project</td><td colspan="2">(Other)</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">The exam is not taken. In order to obtain a signature, it is necessary to complete 100% of the planned voyage on the school ship, actively participate in the exercises, fill in the appropriate log and complete other set tasks. Students who have completed maritime high school and have more than 6 months of navigation as deck trainees (or officers) in the last five years will be recognized as navigational practices. Evidence is obtained by inspecting the seaman's book, and by reviewing the authorization of the officer of the navigational watch or by reviewing the log kept by the cadet.</td></tr>
</table>

	Continuous evaluation of students' performance **Elements of evaluation** / **Achievement (min.%)** / **Portion of the final grade (%)** Class attendance — 100 — 50 Demonstration of skills and knowledge — 100 — 50 Total — — 100

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	IMO: Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)	1	Yes
	MARISEC: Bridge Procedures Guide, 1998		Yes
	IMO/ILO Reference Manual		Yes
	IMO: ''SOLAS, Consolidated Edition 2014'', IMO Publishing, London, United Kingdom, 2014.		Yes
Optional literature (at the time of submission of study programme proposal)	1."21st Century Seamanship", Witherby Seamanship, Edinburgh, Scotland, 2.Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002. 3.House, D.J.: "Seamanship Techniques, 3rd Edition'', 2004, Elsevier Ltd. (https://anzaliport.pmo.ir/pso_conten t/media/digitallibrary/2013/1/book13/ 13.pdf) 4.House, D. J.: ''Marine Survival, 3rd Edition'', Witherby Seamanship, Edinburgh, Scotland, 2011		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire		
Other (as the proposer wishes to add)			

4.11.2.9 Physical Education

COURSE TITLE	**PHYSICAL EDUCATION**					
Code	VPO109	Year of study	1 st			
Course teacher	DomagojBagarić,M.P.Ed.	Credits (ECTS)	0			
Associate teachers	Ivica Bajaj, M.P.Ed.	Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning				

COURSE DESCRIPTION						
Course objectives	The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.					
Course enrolment requirements and entry competencies required for the course	/					
Course enrolment requirements and entry competencies required for the course	Use part of the basic kinesiological motor knowledge about a certain kinesiological activity that is important for successful studying. Develop the abilities, characteristics and positive attitudes defined within the educational area of physical education which contribute to successful studying, and afterwards, to better and more efficient performance of military service. Recognize the need and importance of regular exercise in order to preserve one's health and improve the quality of life. Use methodological procedures while carrying out kinesiological activities. Perform basic kinesiological programs on one's own. Reconsider acquired eating and regular exercise habits. Conduct the testing of anthropological characteristics.					
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises:** 1. Regular testing of physical abilities 2. The development of functional abilities 3. The development of motor abilities 4. Fitness programs 5. The basics of martial arts					
Format of instruction:	☐Lectures ☐ Seminars ☒ Exercises ☐ On-line in entirety ☐ Field work		☐ Individual assignments ☐ Multimedia ☐ Lab exercises ☐ Mentoring			
Student responsibilities	**Student obligations** Students are required to participate in exercises. Records of student attendance are also kept.					
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research		Practical training	
	Experimental work		Report		Self-study and homework assignements (Other)	
	Essay		Seminar paper		(Other)	
			Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student	**Assessment and evaluation of full-time students' work**					

<table>
<tr><td>work in class and at the final exam</td><td>During the academic year, students are required to take two regular physical fitness tests to meet the established norms.<table><tr><td>Individual practical tasks (performing sets of exercises)</td><td></td><td></td></tr><tr><td>In total</td><td>100</td><td>100</td></tr></table></td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr><tr><td>Tudor O. Bompa, Ph.D.: Periodizacija teorija i metodologija treninga, Zagreb, 2006.</td><td></td><td>Yes</td></tr><tr><td></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">University survey and teaching supervision.</td></tr>
<tr><td>Quality assurance methods that ensure acquisition of learning outcomes</td><td colspan="3"></td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

4.11.3 2nd Year, III Semester

4.11.3.1 Naval English I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">NAVAL ENGLISH I</td></tr>
<tr><td>Code</td><td>PFP171</td><td>Year of study</td><td colspan="4">2</td></tr>
<tr><td>Course teacher</td><td>Adelija Čulić-Viskota, Ph.D.
Silvana Kokan, M.Ed.</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Davor Vodopija, M.Ed.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">20</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Acquiring basic and specialized English language skills and competencies in order to work efficiently in a specific environment of a navy as well as meeting the requirements necessary to work within the NATO system.
Mastering presentation skills on navy topics.
Encouraging and developing students' cognitive abilities as well as developing basic language skills: listening, reading, writing and speaking.
Developing research skills and abilities of gathering, organizing and evaluating the information.</td></tr>
<tr><td>Course enrolment requirements and entry</td><td colspan="6">Successful completion of Maritime English II</td></tr>
</table>

competencies required for the course	
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Upon completion of the course, students will be able to communicate in English, as follows: - distinguish terminology related to military hierarchy, organisation and command structure; - categorize terminology related to uniform types and insignia; - explain officers' and NCO's duties; - distinguish basic administrative procedures and forms; - describe conditions of combat readiness; - present types and characteristics of warships; - present types and characteristics of amphibious ships and patrol boats.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Rank and Rate 2. Ship Organization: Command Structure 3. Ship Organization: Departments and Divisions 4. Uniforms 5. Shipboard Duties 6. Bills 7. Conditions of Readiness 8. Ship characteristics 9. Aircraft Carriers 10. Cruisers 11. Destroyers and Frigates 12. Submarines 13. Amphibious Warfare Ships 14. Patrol Combatants 15. Revision **Exercises:** 1. Offering Congratulations / Writing an application for rating 2. Describing someone's record / Writing a recommendation 3. Checking for information / Writing a Command Department Log 4. Apologizing for a mistake / Writing: Disciplinary Report 5. Emphasizing a point / Writing: Ship's Maintenance Log 6. Confirming information / Writing: Emergency Assignment Form 7. Giving commands / Writing: Change of Readiness Report 8. Midterm exam 9. Describing abilities, making comparisons / Writing: Specifications 10. Getting more information / Writing: Taking notes 11. Supporting an idea / Writing: Notes on the POS mission 12. Describing limits / Mission Plan 13. Stating preference / Writing: Operation Plan 14. Getting people's attention / Writing: Patrol Mission Briefing Form 15. End of term exam
Format of instruction:	☒lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☒field work ☒ independent assignments ☒ multimedia ☐ laboratory ☐ tutorials
Student responsibilities	**Full time students' responsibilities** Students are required to attend classes regularly and participate actively, bring class materials and prepare assignments on regular basis. The maximum of six hours of

<table>
<tr><td></td><td colspan="6">absence is allowed, including both, absence from the lectures or exercises. Class attendance is required in order to obtain the course teacher’s signature at the end of a semester. In case students are denied the course teacher’s signature, they are to re-enrol in the course the following academic year.</td></tr>
<tr><td rowspan="6">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>1.5</td><td>Oral exam</td><td>1</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">
Assessment and evaluation of full-time students' work
Final exam comprises two parts, a written and oral exam. The written exam may be successfully completed by taking a midterm and end of term exam. Tested content is based on class materials and it comprises professional terminology and grammar. Students have an option to complete the written exam before the beginning of the examination period. In this case, at the final exam, students shall take only the oral exam. If students fail the midterm/end of term exam but fulfil the minimum of class responsibilities, they are allowed to take the entire final exam in the allocated examination period. It is required to achieve at minimum 50% of the points at the midterm /end of term exams/written exam in order to access the oral exam. Students have to apply for the final exam in the examination period in order to gain access to the exam and in order to have the grade entered into the system.
Exam application and application withdrawal are done via Studomat, an online student portal.

Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Lecture attendance and activity level at exercises</td><td>max. 6 hours of absence during a semester</td><td>10</td></tr>
<tr><td>Mid-term / End-term exams</td><td>50</td><td>40</td></tr>
<tr><td>Total</td><td></td><td>50 – in this case student doesn't take written exam</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Practical exam (written)</td><td>50</td><td>20</td></tr>
<tr><td>Theoretical exam (written and/or oral)</td><td>50</td><td>50</td></tr>
<tr><td>Pre-activities (include all elements of continuous evaluation)</td><td>100</td><td>30</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Fails to meet minimal criteria</td><td>Fail (1)</td></tr>
</table>
</td></tr>
</table>

50-64	Meets minimal criteria	Sufficient (2)	
65-79	Average achievement with noticeable mistakes	Good (3)	
80-89	Above average achievement with occasional mistakes	Very good (4)	
90-100	Outstanding achievement	Excellent (5)	

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Taylor, J. i Goodwell, J. (2011.): Career Paths Navy Book 1, 2, Express Publishing		Yes
	2. Richard Bowyer, (2004): Campaign Dictionary of Military Terms, Macmillan Bloomsbury		Yes
	3. Graham Robertson, (2005): Shipshape - A Thematic Grammar, I.T.O. Srl		Yes
Optional literature (at the time of submission of study programme proposal)	5. Smith, S. i Howell M., (2005.): Navy Life One „Elementary“, Istituto Tecnico Orion 6. Smith, S. i Howell M., (2005.): Navy Life One „Elementary“ – Exercises, Istituto Tecnico Orion		
Quality assurance methods that ensure the acquisition of exit competencies	Students' questionnaire, attendance list, supervision of teaching		
Other (as the proposer wishes to add)			

4.11.3.2 Technical Mechanics I

NAME OF THE COURSE	**TECHNICAL MECHANICS I**						
Code	VPS101	Year of study	2nd				
Course teacher	Zlatan Kulenović,Ph.D.	Credits (ECTS)	4				
Associate teachers	Živko Jurišić, M.Sc.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F	
			30	0	15	0	
Status of the course	Mandatory	Percentage of application of e-learning					
COURSE DESCRIPTION							

Course objectives	Familiarisation with basic principles and methods in mechanics and their application in studying the effects of forces and their influence on body motion and states. Developing straightforward and logical way of thinking while analysing and solving practical engineering tasks in the area of statics and kinematics of marine machine elements and constructions.
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Describe basic terminology, principles and methods related to the mechanics of solid bodies and the importance of their application in maritime engineering. 2. Define the fundamentals of statics of solid bodies (systems of forces and moments in plane and space, addition and resolution, equilibrium, girders, friction, centre of gravity). 3. Solve and analyse the examples of beams and trusses under various types of load. 4. Define and understand the basic kinematic quantities of rectilinear and curvilinear motion (position, speed and acceleration) of a body in various coordinate systems. 5. Solve and analyse the examples of kinematic translation, rotation, plane and complex body motion. 6. Develop prerequisites for understanding and acquiring knowledge in other courses within the curriculum.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Introduction. The tasks and division of mechanics. Elements and the basic laws of mechanics. Statics of rigid bodies. Basic concepts and tasks. 2. Axioms of statics. Connections and their reactions. Static of particles. The addition of forces. 3. Resolution of the force. Equilibrium of forces. Solving the equilibrium problems. 4. Statics of bodies. Moment of a force. Moment rule. Couple. Reduction of system of forces. 5. Equilibrium of forces. Solving the equilibrium problems. 6. Friction. Sliding friction. Friction on an incline. Friction in the bearings. Belt friction. Rolling friction. 7. Carriers. Beams. Reactions in the supports. Internal forces. 8. Static diagrams. 9. Trusses. Method of joints. Method of sections. 10. Centre of gravity. Positioning of the centre of gravity. 11. Kinematics. Kinematics of particle. Basic kinematic quantities. Rectilinear motion. Uniform motion. Non-uniform motion. Simple harmonic motion. 12. Curvilinear motion. Displaying in Descartes, polar and natural coordinate system. 13. Kinematics of rigid body. Translation. Rotation about a fixed axis. 14. Planar motion. Complex motion. Kinematic quantities of complex motion. Addition of motions. 15. Kinematics of simple mechanisms. The piston mechanism. Gear mechanisms. **Exercises:** 1. Static of particle. Addition of the forces. Resolution of force. 2. Equilibrium of forces. 3. Equilibrium of forces. 4. Statics of bodies. Reduction of force system. Equilibrium of system of forces. 5. Equilibrium of system of forces. 6. Friction. Sliding friction. Friction in the bearings. 7. Belt friction. Rolling friction. 8. Carriers. Beams.

	9. Beams. 10. Trusses. Centre of gravity. 11. Kinematics of particle. Rectilinear motion. 12. Curvilinear motion. 13. Kinematics of rigid body. Translation. Rotation about a fixed axis. 14. Planar motion. 15. Complex motion.

Format of instruction:	☒lectures ☐ seminars and workshops ☒ exercises ☐ on line entirely ☐mixed e-learning ☐ field work	☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring
Student responsibilities	Attending lectures (min 80%) and exercises (100%). In case of insufficient number of arrivals (up to 20% of excused absences), students will have to do additional tasksin order to obtain the course teacher's signature. Students, who due to illness cannot attend classes, are required to bring a valid doctor's note. Students, who achieve less than 50% of arrivals to class, are not eligible for signature and shall enrol in the course again next year. Students, who pass the two midterm exams, do not take the final exam. Students can retake only one midterm exam they have not passed. If students have not passed both midterm exams, they are required to take the final exam (written and oral).	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,1	Research		Practical training	
	Experimental work		Report		Independent study and homework (other)	
	Essay		Seminar paper		(Insert other)	
	Midterm/ End of term exams	2,9	Oral exam		(Insert other)	
	Written exam		Project		(Insert other)	

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80	28,125
Midterm exam I	50	35,937
Midterm exam II	50	35,937

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written exam	50	60
Oral exam	50	30
Previous activities (including any indication of continuous assessment)	100	10
Total		100

Grading scale:

Points (%)	Criterion	Grade

	0-49	Does not meet minimum criteria	Fail (1)
	50-64	Meets minimum criteria	Sufficient (2)
	65-79	Average success with noticeable mistakes	Good (3)
	80-89	Above average success with few mistakes	Very good (4)
	90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	R. C. Hibbeler, Statics and Dynamics, Prentice Hall, US, 2010.		yes
	J. Hannah, M. J. Hillier, Applied Mechanics, Longman Group, London 1998.		yes
Optional literature (at the time of submission of study programme proposal)	Z. Kulenović, Tehnička mehanika I, Pomorski fakultet Sveučilišta u Splitu, Split 2013. Z. Kulenović, Tehnička mehanika za pomorce, Pomorski fakultet Sveučilišta u Splitu, Split 2013. Z. Kulenović, Mehanika krutih tijela, Odjel za studij mora i pomorstva Sveučilišta u Splitu, Split 2002. O. Muftić, Mehanika I, Tehnička knjiga, Zagreb 1991. S. Jecić, Mehanika II, Tehnička knjiga, Zagreb 1989.		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by the University of Split. List of student attendance. Teaching process monitored by the Faculty.		
Other (as the proposer wishes to add)			

4.11.3.3 Elements of Maritime Transport I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">ELEMENTS OF MARITIME TRANSPORTI</td></tr>
<tr><td>Code</td><td>VPN106</td><td>Year of study</td><td colspan="3">2nd</td></tr>
<tr><td>Course teacher</td><td>Marko Katalinić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ana Karaman, M.Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Aims of the course:
-to introduce students to the basics of the ship’s geometry,
-to gain knowledge of materials in shipbuilding and ship maintenance
-to recognize the structural elements of the ship and their role in the strength of the ship and waterproofing.
-to get to know the technology of shipbuilding and to learn the basic concepts of stability, manoeuvrability and sea keeping of the ship.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">Describe and explain the development of ships throughout history.
Get to know the role of classification societies.
Categorize the terms of ship geometry.
Analyse different ship drawings and plans.
Identify ships by application and type of cargo.
Learn the basics of shipbuilding materials.
Analyse ship construction framing system, elements of longitudinal and transverse strength of the ship. Analyse structural elements of the ship.
Distinguish shipbuilding processes in the shipyard.
To present the basics of welding and recognize the importance of preparation and quality of the welds.
Define ship bulkheads and recognize watertight bulkheads and the openings therein.
Distinguish types of corrosion protection.
Establish the level of maintenance and the importance of the ship survey.
Examine the basics of stability, seakeeping and ship manoeuvrability.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures

01. Historical development of ships and the importance of ships and shipbuilding.
02. The importance of classification societies and International Maritime Organization.
03. Drawings of ship geometry, ship main dimensions and measures.
04. Ship drawings, lines plan, general arrangement, hydrostatic tables.
05. Division of ships by application and type of cargo.
06. Shipbuilding materials and the importance of their characteristics.
07. Construction framing systems, elements of various construction types, structural elements of the ship.</td></tr>
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<table>
<tr><td></td><td colspan="6">08. Bulkheads, waterproofing and requirements of the classification societies.
09. Strength of the ship construction.
10. Development of the shipbuilding process in the shipyard.
11. Welding in shipbuilding.
12. Resistance, propulsion and manoeuvrability of the ship.
13. Surveys of the structure of the ship and anti-corrosion protection.
14. Basic terms of stability of the ship.
15. Basics elements of seakeeping.

Exercises

01.Introduction to the work of classification societies.
02. Overview of the main dimensions, calculations of the form coefficients.
03. Ship drawings.
04. Calculation of coefficients using numerical integration.
05. Introducing characteristic features of shipbuilding construction materials.
06. Elements of the ship construction.
07. Visit to the shipyard, introduction to ship construction.
08. Sketching structural elements. Colloquium 01.
09. Bending moment and shear forces.
10. Visit to the shipyard. Introduction to the shipbuilding process.
11. Sketching ship rudders and propellers.
12. Corrosion affects to ship construction.
13. Sea states and waves.
14. Recognizing and sketching the ship equipment.
15. Repeatition. Colloquium 02.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☒ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures and exercises are compulsory. The records of arrivals to class and practical exercises are kept continuously during the semester. The requirement for obtaining signatures is the attendance of at least 80% at classes (lectures and exercises) and 100% of practical exercises. Obtaining the course teacher’s signature is a prerequisite for taking the exam.
Written absentee cannot replace attending classes and practical exercises.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td>0,5</td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>3</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
Class attendance is compulsory. Requirement for obtaining a signature is attendance of a minimum 80% of the lectures.
Testing includes 2 midterm exams. The first midterm exam, including lectures 1-7, is in the eighth week of classes, and the other midterm exam with lectures 8-14 is in the 15th week of classes.
Sample questions for the midterm exam are available.
At each midterm exam it is necessary to achieve at least60% of the points to pass. Students that cannot attend a midterm exam due to objective reasons or do</td></tr>
</table>

not achieve the minimum percentage, may retake the midterm exam in the 9th week.
Students who do not pass the first midterm exam cannot are not allowed to take the second midterm exam.
The final evaluation includes lecture attendance, the results of tests and individual assignments.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the fina grade (%)
Attending at lectures and active participation in exercises	80	15
I midterm exam	60	40
II midterm exam	60	40
Individual assignments	100	5

Grading scale:

Points (%)	Criterion	Grade
0-59	Does not meet minimum criteria	Fail (1)
60-69	Meets minimum criteria	Sufficient (2
70-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (
90-100	Extraordinary success	Excellent (5

Students who do not pass the midterm exams during the semester but obtain the signature, are required to sit for the exam in the examination period.

Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Grubišić, I.: The Geometry of Ships, digital book		yes
Optional literature (at the time of submission of study programme proposal)	1. Lechter, J.:The Geometry of Ships, SNAME 2. Biran, A.:Ship Hydrostatics and Stability 3. SNAME:Ship Design and Construction I & II,2003 4. Dokkum, K.: Ship Knowledge, Dokmar 5. Eyres, D.J: Ship Construction		
Quality assurance methods that ensure the acquisition of exit competencies	Questionnaires, evidence lists of the students, faculty supervision.		
Other (as the proposer wishes to add)			

4.11.3.4 Seamanship III

NAME OF THE COURSE	SEAMANSHIP III						
Code	VPN107	Year of study	2nd				
Course teacher	Lea Vojković, Ph.D.	Credits (ECTS)	4				
Associate teachers	Tomislav Sunko, M. Eng. Stipe Galić, M. Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	45	0

	Filip Bojić					
Status of the course	Mandatory	Percentage of application of e-learning	20%			

COURSE DESCRIPTION	
Course objectives	Master the basic notions of navigation, meteorology, ship handling and manoeuvring as well as passage planning. Familiarize with the basic principles of Bridge watch-keeping and Regulations for preventing collisions at sea. Master radar navigation systems, and other marine electronic navigation devices and systems Familiarize with basic signs of emergency at sea, Morse code and communications in distress,
Course enrolment requirements and entry competencies required for the course	Successful completion of Seamanship II
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Independently plot course and safely conduct the ship in all conditions using knowledge of different methods of positioning and maritime kinematics. Plan courses and routes using knowledge of the essential features of charts. Basic notions in meteorology and meteorological reports. Describe and explain the principles of depth sounder, speed log, compass, satellite positioning systems, and other electronic navigation devices and systems. Recognize marine electronic navigation devices. Describe and explain the principles of radar devices. Correctly interpret images on collision avoidance radars (ARPA). By proper use of ARPA systems avoid other ships and risks at sea. By applying graphical plotting avoid collisions at sea. Correctly interpret the image on the ECDIS, alone or in combination with ARPA systems. To make simple voyage plan and explain basic ships handling. Speed logs, depth sounders, non-magnetic compasses. Satellite positioning systems. Navigation radar, range, accuracy, object discrimination, blind spot, interference, relative and true radar image, determining direction, distance and position of the ship. The orientation of the radar image, the true and relative motion. Radar in coastal navigation. Graphical plotting. Errors of radar systems. Radar in search and rescue. Radar transponder in search and rescue - SART. Collision Avoidance Radar ARPA. ECDIS system Describe and explain the COLREG. Proper communication in emergency and proper usage of signs of emergency at sea.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Fundamental concepts in maritime navigation: course, bearing, relative bearing, latitude and longitude. Basic measurement units, nautical mile, cable, inch, foot, yard, fathom, knot, variation, deviation, control of deviation. Nautical charts: chart projections, Mercator chart, nautical charts . 2. Instruments and tools in navigation: compass (errors and corrections), speed logs , depth-sounders, range finder, ARPA radars, GPS/DGPS, AIS, ECDIS, integrated navigational systems. 3. Symbols and abbreviations on nautical charts, position line and drawing on nautical chart (distance circle and line), different methods of determining position of a ship at sea: observed position, position at time intervals, dead reckoning, errors in positioning, navigation with drift. 4. Passage planning: Ships' Routeing Systems and Ship Reporting Systems, nautical publications, Pilots, List of lights, Maritime radio service, Notices to

	Mariners for updated and corrected chart, ships books and documents, bridge watch, ships log. Basic notions in meteorology, meteorological reports. 5. Methods in astronomical navigation: Sun and Moon, sunrise and sunset, twilight, dawn refraction and depression and time. Coordinate systems, Real and apparent motion of celestial bodies Identification of the heavenly bodies (sextant, chronometer, nautical almanac). 6. Regulations for preventing collisions at sea, bridge watch-keeping, importance of bridge teamwork. 7. Passage planning. Basic techniques of ships handling: berthing, unberthing, anchoring; emergency manoeuvring. 8. The principle operation of marine RADAR. IMO Performance Standards for Navigational Equipment. Start up and setting up radar display, log off. 9. Navigation radar, range, accuracy, object discrimination, blind spot, interference, relative and true radar image, determining direction, distance and position of the ship. 10. Radar in search and rescue. Radar transponder in search and rescue - SART Collision Avoidance Radar ARPA 11. Graphical plotting. 12. Method to use of ARPA systems avoid other ships, true and relative vectors, avoidance simulation. Determining position and usage of parallel index. 13. ARPA navigation radar, operating principles, errors, connection with other systems. ARPA/AIS, errors, of ARPA system, VDR. ECDIS system, use and accuracy. Integrated navigation systems.. 14. Methods of search and rescue at sea.; Communications in distress, urgency, safety and general communication; WWNWS; GMDSS. 15. Visual and sound signals. Making contact, exchange of message and end procedure. Signal flags. Morse code. Visual signalling device for optical communication using Morse code. The purpose of the ICS International Code of Signals and usage of ICS (Pub. 102) . **Exercise** 1. Applications of trigonometry in geometry and sphere trigonometry for nautical calculations. Basic knowledge about nautical drawing tools, nautical charts and nautical tables. Calculating distance problems : distance, speed and time. The SI base units the building blocks of the system and all other units derived from them (m, kg, s, A, K, mol, cd). 2. Reading of nautical charts-basic elements. Chart work: reading and drawing a position on nautical charts. Reading and drawing angles and distances on nautical charts. Distance measuring. 3. Chart work: the marks on nautical charts (hydrographical and topographic marks), practical exam of buoyage– IALA systems A and B. Droving position line at chart, dead reckoning position. Position at time intervals. 4. Making a voyage plan and calculation for time of arrival (ETA) 5. Using of nautical almanac. Methods of deviation control. Sun, sunrise and sunset. 6. The International Regulations for Preventing Collisions at Sea 7. Basic ship handling techniques berthing, unberthing and anchoring,. 8. Basic ship handling techniques: the deck equipment, anchor anchor chains and windlass, capstan and winches – visit to the ship in port. 9. The marine electronic navigation devices on the command bridge. Navigation radar –using and setting up radar display.

10. Dead sectors, disturbance, the orientation of the radar image, the true and relative motion. Measuring courses, distances and ships positions – manually. Determining when danger of collision exists by radar, SART.
11. Graphical plotting, drawing and calculating elements, CPA i TCPA
12. Graphical plotting, drawing and calculating elements, CPA i TCPA
13. ARPA radar - setting up. ARPA radar-errors and alarms. ARPA radar-manual acquisition and data reading,
14. ARPA radar-automatic and manual plotting, simulation of collision avoidance.
15. Collision Avoidance by ARPA/AIS/ECDIS system, VDR. Usage of Radar in safe sailing and navigation.

Format of instruction:	☒ lectures ☐ seminars and workshops ☐ exercises ☐ on line in entirety ☐ partial e-learning ☒ field work	☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring ☐ (other)
Student responsibilities	Regular lecture attendance, and exercise. Min 80% lecture attendance and 100% exercise.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,25	Research		Practical training	0,75
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Midterm/ End of term exams	1	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Regular lecture attendance and exercise.
Min 80% lecture attendance and 100% exercise.

Midterm exams 4 (numerical problems, work with chart, work with radar, theories). On midterm exams students are required to achieve a minimum of 50% points, on final exam 75% points.
Student must regularly complet assessment of e-learning module.
At final exam include lecture attendance and points on midterm exams, e-learning assesments. Student without midterm exams, are obligated to attend final exam in written and oral form. For final exam marking criteria is equal.

Continuous evaluation of students' performance

Elements of evalutiation	**Achievement (min.%)**	**Portion of the grade (%)**
Regular lecture attendance	80%/100%	20%
Midterm exam	50%/75%	70%
E-learning	100%	10%
In total		100%

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final mark (%)
Exam or midterm exam (oral or written)	50%/100%	60%
Past activities (involve continuous assesments)	100%	40%
Total		100%

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Insufficient (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Points (%)	Criterion	Grade
0-74	Does not meet minimum criteria	Insufficient (1)
75-84	Meets minimum criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent 5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Borje Wallin: Ship Navigation-1st Edition, Dokmar Maritime Publishers B. V., Vlissingen-The Netherlands, 2016.	1	/
	Bole, A.; Dineley, B., Wall. A.: Radar and ARPA Manual, Elsevier Butterworth-Heinemann, 2005. http://www.marcomm.ru/UserFiles/Files/Doc/ARPA%20manual.pdf	1	Yes
	IMO: IAMSAR MANUAL, International Aeronautical and Maritime Search and Rescue Manual, 2016 Edition, Vol. 3 Mobile Facilities, IMO Publishing, 2016	1	/
	Cockroft, A. N., Lameijer, J. N. F., A Guide to the Collision Avoidance Rules, 7th Edition, Butterworth-Heinemann, Oxford, UK, 2012	/	/
	National imagery and mapping agency, international code of signals for visual, sound, and radio communications, United States Edition 1969 edition (revised 2003), NIMA, Bethesda, Maryland, USA, 2003	/	Yes
Optional literature (at the time of submission	➢ Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002.		

of study programme proposal)	➢ Kos, S..; Vranić, D.; Zorović, D.: Elements of electronic navigation for deck officers and masters, Faculty of Maritime Studies Rijeka, Rijeka, 2005. ➢ Admiralty-The Mariner's Handbook, NP100, UKHO. ➢ Navigation course (https://www.sailingissues.com/navcourse0.html)
Quality assurance methods that ensure the acquisition of exit competencies	University survey, list of student attendance, Faculty teaching inspection
Other (as the proposer wishes to add)	

4.11.3.5 Maritime Medicine

NAME OF THE COURSE	**MARITIME MEDICINE**					
Code	VPN108	Year of study	2nd			
Course teacher	Rosanda Mulić, Ph.D.	Credits (ECTS)	3			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Master the methods of providing medical first aid and medical care. Be able to recognize the symptoms of the most common illnesses. Know how to administer medications and when to change the therapy. Know the medicines in the ship medicine chest - the effect they produce, how they should be applied and their most common side-effects. Maintain the ship medicine chest.					
Course enrolment requirements and entry competencies required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Estimate the health condition of the injured person 2. Provide medical first aid in life-threatening situations 3. Use the basic medical equipment on board the ships 4. Understand the request and the provision of radio-medical advice 5. Identify different medical conditions on board and provide appropriate procedures by using the basic medical equipment available on board ships 6. Estimate the needs of the injured person for helicopter transportation. Identify signs of death (early and late signs of death, apparent death, causes of death) and organize corpse procedures (inspection of the deceased person's body, procedure with the body, burial at sea)					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Medicine for seafarers, Introduction. 2. First aid on board.					

	3. Medical care: Shock, Pain management; Eye injuries and diseases; Bone, joint, and muscle injuries. 4. Nursing care and medical procedures. 5. Infectious diseases; Chest pain and other disorders of the heart and circulation;. 6. Tobacco, alcohol, and drug use. 7. Dental problems. Heat stroke and other heat disorders. 8. Pregnancy and childbirth. 9. Near-drowning. Generalized hypothermia due to cold water immersion. Cold exposure injuries. Frostnip. Frostbite. Immersion foot (trench foot). Other medical problems aboard survival craft. 10. Burns, chemical splashes, smoke inhalation, and electrocution. Death at sea. 11. External assistance. Medical advice. Evacuation by helicopter. Ship-to-ship transfer of doctor or patient. Referral information to accompany evacuated patients. 12. Environmental control and hygiene. 13. Preventing disease and promoting health in seafarers. Preventing communicable diseases: Isolation, Immunization, Hepatitis A and hepatitis B, Other infections. Preventing other diseases: Stopping smoking, A balanced diet and Personal hygiene. 14. The ship's medicine chest. Basic rules for managing the medicine chest: Anaphylaxis; Drug rash and other drug-related skin problems; Controlled drugs; Ships carrying dangerous goods. Specific categories of medicines: Fluids for intravenous infusion. 15. Abdominal and chest injuries. Wounds: Wound healing; Red flag wounds; Local anaesthesia. Special wounds. Dressing wounds that cannot be closed Surgical equipment, instruments and materials. **Exercises:** 1. Check-up of vital functions (AVPU, ABC rule, quick examination of the injured person). Monitoring the vital signs. How to take the pulse rate. How to take the body temperature. How to take the respiratory (breathing) rate. 2. Measuring blood pressure. 3. Disease history-taking, inspection of an ill person (SAMPLE form) 4. Submersion, Suffocation, Near-drowning – First aid. 5. Getting acquainted with the resuscitation mask and oxygen breathing apparatus. Applying of oxygen. Oxygen masks. 6. Getting acquainted with external haemorrhage control devices 7. Immobilization of broken arm/leg bones, immobilization in case of suspected spinal injury. 8. Treatment of an open head injury, treatment of open and closed burn wounds. 9. Treatment and stitching of wounds, disinfecting the skin and area around the wound, skin disinfectants, incision of built up pus. 10. Identifying the pulse palpation points, using urine reagent test strips. 11. Administering an intramuscular injection. 12. Ship environment inspection, getting acquainted with the tools and methods for pest and rodent control. 13. What to do in case of bleeding after tooth extraction, in case a tooth filling falls out or in case of toothache. 14. Getting to know about medications, its forms and dosage, learning about the Ordinance on minimum equipment and contents of the ship medicine chest. 15. Asking for radio-medical advice, procedure, filling out the form.	
	☒ lectures	☒ individual assignments

<table>
<tr><td>Format of instruction:</td><td colspan="6">☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="6">☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="12">Student obligations
Students must attend the lectures. Their presence shall be registered and kept in a record.
In order to get the signature, students must attend at least 95% of the lectures and 100% of the exercises.
In case of insufficient attendance, the students will not be granted a signature and shall be obliged to enrol in the course the following year.
Students may take the oral part of the exam through continuous evaluations during the semester, by taking mid term tests. Mid term tests are not compulsory.
Students who do not pass the mid term test and have obtained the signature must take the oral exam during the exam period.
Using e-learning materials, students may study the given topics individually or as a team.
Students who have passed the oral exam via mid term tests must apply for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td colspan="2">Class attendance</td><td>1.2</td><td colspan="2">Research</td><td></td><td colspan="2">Practical training</td><td>0.3</td></tr>
<tr><td colspan="2">Experimental work</td><td></td><td colspan="2">Report</td><td></td><td colspan="2">(Other)</td><td></td></tr>
<tr><td colspan="2">Essay</td><td></td><td colspan="2">Seminar paper</td><td>0.5</td><td colspan="2">(Other)</td><td></td></tr>
<tr><td colspan="2">Midterm/ End of term exams</td><td></td><td colspan="2">Oral exam</td><td>0.5</td><td colspan="2">(Other)</td><td></td></tr>
<tr><td colspan="2">Written exam</td><td>0.5</td><td colspan="2">Project</td><td></td><td colspan="2">(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="12">Assessment and evaluation of full-time students' work
Class attendance is compulsory for regular students and the precondition for obtaining a signature is attendance at 95% of the lectures and 100% of the exercises.
Mid term tests are organized during the semester. The first mid term test covers weeks 1 to 9 and is taken in week 10 of the lectures. The second mid term test is organized at the end of the class. To pass the test, one must have at least 60% of the points. Students who for objective reasons do not take the mid term test or do not pass the minimum may take oral exam.
The final grade is based on the lecture attendance, mid term test/oral exam results and written exam results. Students who do not take the mid term test during the semester but have been granted a signature may take the oral exam in the exam period. The same rules and criteria apply for the exam period evaluation as for continuous knowledge checks.

Continuous evaluation of students' performance</td></tr>
</table>

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance of lectures and active participation in exercises	min. class attendance 95% of lectures and 100% of exercises	20
Midterm exam I	60	30
Midterm exam II	60	30
Oral exam		20
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Test or progress/midterm exams (written)	60	30+30
Theory test (written and/or oral)	50	20
Previous activity (including all continuous test indicators)	100	20
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-60	Does not meet minimum criteria	Fail (1)
61-70	Meets minimum criteria	Sufficient (2)
71-80	Average success with noticeable mistakes	Good (3)
81-90	Above-average success with few mistakes	Very good (4)
91-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Norvegian Centre of Maritime Medicine. Textbook of Maritime Medicine. Revised second edition 2013. Universitas Bergensis. Available at: http://www.ncmm.no/publications/textbook-of-maritime-medicine	0	Available

	International Medical Guide for Ships. 3rd edition. World Health Organization, Geneva 2007. Available at: https://apps.who.int/iris/bitstream/handle/10665/43814/9789240682313_eng.pdf;jsessionid=E40060EE5DB8F91A92F32C57029E7A4C?sequence=1	1	Available
Optional literature (at the time of submission of study programme proposal)	International maritime law embodied in international conventions. International Health Regulations, World Health Organization Geneva, 2005.		
Quality assurance methods that ensure the acquisition of exit competencies	University questionnaire, student attendance list, monitoring by the Faculty		
Other (as the proposer wishes to add)			

4.11.3.6 Military Maritime Geography

NAME OF THE COURSE	**MILITARY MARITIME GEOGRAPHY**					
Code	VPN109	Year of study	2nd			
Course teacher	Mladen Pahernik, Ph.D.	Credits (ECTS)	5			
Associate teachers	Mirko Šundov, Ph.D. Marinko Lozančić, Ph.D. Marko Zečević, Ph.D. Jelena Petrović, Ph.D.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	15	0
Status of the course	Mandatory for all students	Percentage of application of e-learning	20%			
COURSE DESCRIPTION						
Course objectives	To get students familiar with preparing and carrying out military activities in accordance with requirements of natural and social elements of the geo-space in maritime, coastal and littoral environment. To get students familiar with cartography work and orientation in topographic- cartographic environment.					
Course enrolment requirements and entry competencies required for the course	/					

Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Identify geographical space as a factor of combat and other-than-war naval military operations. 2. Plan military activities with regard to maritime-military characteristics of the area. 3. Name important maritime-military factors at sea, coast and littoral area. 4. Assess the coast and littoral zone from military-geographical and military-geological aspect. 5. Apply military-geological features of the coast and littoral zone during naval operations. 6. Use basic tactical topographical map for simple cartographic measuring 7. Develop the capability of using functionally spatial methods during military decisions making process.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Introduction into maritime-military geography. 2. Military categories of the area: a. Wartime framework (military operations; military geography and operational planning) b. Spatial categories of warfare (theatres of war; battlefields) 3. Maritime cartography: c. Maritime cartography (historical outline; modern maritime charts) d. Military topographic maps (topographic maps; cartometry) 4. Factors of the maritime military geography: a. Sea (geographical position, spatial coverage and borders at sea; interrelation of the sea and land; classification of the sea) b. Structure and division of underwater area (structural elements of the lithosphere – epicontinental shelf; deep-sea basin, seamounts, sediments of the sea bed c. Characteristics of the sea (salinity; gases in the sea; temperature of the sea; ice in the sea, sea pressure, sound propagation and sea density; luminosity, clearness and sea colour) d. Sea movements (sea level; sea currents, tides, waves) e. Life in the sea (sea flora and fauna; quality of the sea) f. Coast and islands (coast and coastal zone; types of coasts; islands; military-geological aspects of the littoral area) g. Climatic and meteorological elements (air temperature; precipitation; circulation of the air) h. Geopolitical elements (internal stability; local geopolitical stability; national strength and influence) i. Population (density, movement and structure of the population) j. Traffic (maritime traffic; maritime communications; harbours, naval bases) k. Economy (tourism; ore deposits; economic development; mariculture) l. Maritime military characteristics of the Mediterranean Sea m. Maritime military characteristics of the Adriatic Sea **Exercises:** Cartometry: a. Determining basic cartographic elements b. Measuring lengths, determining angles c. Determining geographical and rectangular coordinates on topographic maps Case studies: a. Normandy Landing in 1944

	b. Iwo Jima Landing in 1944 c. Gallipoli Landing in 1915 d. Dieppe Raid in 1942
Format of instruction:	☒lectures ☐seminars ☒exercises ☐*on line* in entirety ☐field work ☒individual assignments ☒multimedia ☐lab exercises ☒mentoring
Student responsibilities	Lectures and exercises are mandatory for students with a record of attendance. To get a required signature, students' minimal attendance at lectures is 80% and 90% at exercises. In case of insufficient attendance, students will not obtain a signature and will lose the right to take an exam, and consequently shall enrol this course next academic year. A note of excuse cannot justify nor replace the class attendance. In order to get a required signature students have to meet attendance requirements and have to finish three exercises. Students who pass the midterm/end of term exams from the exercises and perform successfully all other required obligations will be released from taking the final written exam. Students who have not passed midtem/end of term exams and have obtained the signature shall take the final written exam. Students that have enough points to pass the course have to apply for the exam during the first term in order to get their grade signed in, or to have an oral exam if they want a better grade.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1	Research		Practical training	1
	Experimental work		Report		Independent study and homework (other)	
	Essay		Seminar paper		(other)	
	Midterm/End of term exams	3	Oral exam		(other)	
	Written exam		Project		(other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** Two mid-term exams are written per semester: Midterm exam: Covers class material from the 1st to the 7th week lectures will be conducted in the 8th week of classes. End of term exam: Covers class 9th to the 15th week lectures will be conducted in the 15th week of classes. At midterm and end of term exam students are requried to achieve the minimum 60% of points for a passing grade. Students who do not take one of the two or do not achieve the minimal percentage for passing grade do not have a possibility of retaking or correction. The final grade comprises attendance and active participation in lectures, a grade for exercises (practical training) and continuous evaluation of knowledge. Students who fail midterm/end of term exam, but who obtained a signature, are obligated to take a final written exam witnin the examination period. Same grading criteria are valid for written final exam as for continuous mid-terms exams.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance and active participation in class	80	10
Quizzes/ Midterm/End of term exams	60	70
Exercises	60	20
Total		100

Final examination:

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Final written exam	60	70
Attendance and active participation in class	90	10
Exercises	60	20
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-60	Does not meet minimal criteria	Fail (1)
61-70	Meets minimal criteria	Sufficient (2)
71-80	Average achievement with noticeable mistakes	Good (3)
81-90	Above-average achievement with a few mistakes	Very good (4)
91-100	Exceptional achievement	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	STANAG 2211 – Geodetic datum, Projections, Grids, and Grid references (2016) STANAG 3600 - Topographical Land Maps and Aeronautical Charts for Joint Operations (1979) STANAG 3676 - Marginal Information on Land Maps, Aeronautical Charts and Photomaps (2000)		YES
	Collins, J. M., (1998), „Military geography for professionals and the public“		YES

	Galloway,G.R, Jr., Winters H.A. (1998), „Battling the Elements: Weather and Terrain in the Conduct of War“		YES
	Patrick O'Sullivan (1991), Terrain and Tactics		YES
	Holloway, J., Thomas, M.D. and Durrant, C. (2015), “Strategic Military Geography: Climate Change Adaptation and the Military." Handbook of Climate Change Adaptation.		YES
	Tuckey, J. H. (2012), “Maritime Geography and Statistics“		YES
	Kennett, J. (1981), “Marine Geology”		YES
Optional literature (at the time of submission of study programme proposal)	Rech, M. Bos,K., Jenkings N., Williams,A., Woodward A., (2015), “Geography, military geography, and critical military studies”, Critical Military Studies, Pages 47-60 Horvat, S., Železnjak, Ž., Lapaine,M., Military Topographiy and Cartographic System of the Republic of Croatia Joe Breman (2002), „Marine Geography: GIS for the Oceans and Seas“		
Quality assurance methods that ensure the acquisition of exit competencies	Evidence of students’ attendance, evidence of professors’ attendance, student questionnaire, Faculty class supervision.		
Other (as the proposer wishes to add)			

4.11.3.7 Military History

NAME OF THE COURSE	**MILITARY HISTORY**					
Code	VPO 111	Year of study	2nd			
Course teacher	Ivan Matijević, Ph.D.	Credits (ECTS)	3			
Associate teachers	Zvonimir Forker, M.A.	Type of instruction (number of hours)	L	S	E	F
			20	0	10	0
Status of the course	Mandatory for all students	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	- To offer an overview of military history from antiquity to the modern age - To emphasize the impossibility of studying military history without taking into account the political and economic history and other development processes - Identify the causes and consequences of key events - Establish a time sequence and characteristics of individual conflicts and their conditionality of space in which they took place - Analyze the individual battles (eg. Marathon in 490 BC) as well as complex military operations (eg. Overlord 1944) - Compare the equipment and the quality of the opposing military forces - Expose the development of weapons and methods of warfare					

	- Recognize ways of coordinating activities of military branches during military operations - Identify and evaluate the role of certain commanders - Consider the main features of military operations during the war of independence of the Republic of Croatia (1991-1995)
Course enrolment requirements and entry competences required for the course	
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	- Explain the ways of functioning of the armies during all historical periods - Notice the reasons for the restructuring of the army over time, learn about the scope of reforms and their consequences - Notice the basic differences in the battle order of armies of the opposing sides - Notice the occurrence of tactical innovations in the battle - Realize the importance of geo-strategic circumstances of particular military conflicts - Interpret the modes of functioning of society during the war
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. **Greece and Macedonia in the war against Persia.** Greek forces in the battle against the Persians: Marathon (490 BC), Thermopylae and Salamis (480 BC). The importance of choosing the place to face the enemy. Alexander the Macedonian, his innovations and organization of military campaigns. Using the phalanx and cavalry. The reasons and consequences of the Macedonian victory at Gaugamela 331 BC. The reasons for the failure of the Persian army. 2. **Roman army - the best war machine of the ancient world.** Roman army at the time of the Republic and the victory in the wars against Carthage. Military operations on Sicily and the Battle of Cannae 216 BC. The conquest of Gaul and Julius Caesar. The professionalization of the army and its structure (Legion, Auxiliary units and Navy) in the age of Empire. Roman disaster in the Teutoburg Forest 9 AD. Roman crackdown on uprisings: example of Judea (70 and 135). Siege and battlefield tactics. Romans as the greatest experts in fortification in the Ancient World. The transformation of the Roman army in the late antiquity. The importance of archeology in the study of military history. 3. **The wars in medieval Europe.** Horseman as a high status warrior. The significance of the Battle of Poitiers 732. Croatian military power between the Franks and Byzantine. Characteristics of the Crusades (11-13th century) with a focus on the besieging of the cities.The emergence of the Templars and the Teutonic Knights. Battle of Hattin 1187. The penetration of the Mongols in the 13th century. Characteristics of standing armies. Hundred Years War between England and France (1336-1453): Battle of Crecy (1346) and at Agincourt (1415). English longbow as a decisive battle-winning factor. 4. **Europe in the wars against the Ottoman Empire.** Battle of Kosovo Polje (1389) and of Nicopolis (1396). Ottomans besiege and occupy Constantinople 1453. The appearance of artillery. Development of gunpowder weapons radically changed warfare in Europe. Organization of the Ottoman army as the most effective military force in the world of that time. The role of Croatian lands in the penetration of the Ottomans. Sigismund of Luxembourg and Matthias Corvinus in attempts to organize the defense. Significant battles: Krbava (1493), Mohács (1526), Jajce (1527), Klis (1537), Siget (1566), Gvozdansko (1578), Bihać (1592). Krsto Frankopan in the clashes against the Ottomans. The withdrawal of the Ottomans and peace in Sremski Karlovci 1699. 5. **Characteristics of Warfare in the Early Modern Age.** The Uskok war (1615-1617). The reasons for the outbreak of the Thirty Years' War (1618-1648). Prevalence of fire infantry weapons and tactical innovation of the Swedish King Gustav II Adolf: example of the Battle of Lützen 1632. The development of European

armies of 17th and 18th centuries - Polish cavalry, Dutch foot soldiers, French musketeers, Prussian infantryman. Croatian troops across the European battlefields: War of the Austrian Succession (1740-1748). The unit of Baron Franjo Trenk in the first half of the 18th century. Systematic fortification of cities – the example of Tvrđa in Osijek. Army in the service of creating and maintaining overseas colonies. American War of Independence (1775-1783) and multiple significance of the American victory over the British at Saratoga (1777).

6. **The Napoleonic Wars and Europe in the early 19th century.** Wars of Napoleon Bonaparte and Europe in the early 19th century. Napoleon as a conqueror and one of the greatest generals in history. Napoleon's flexible and innovative strategic and tactical management of the army. Fast movement of forces, aggressiveness on the battlefield and coordinated use of cavalry, infantry and artillery. The Battle of Austerlitz (1805) as the pinnacle of French military power. The Battle of Wagram (1809) and Waterloo (1815). The reasons for the collapse of the French army. Croatian troops in Napoleon's Army. Croatian army under Ban Josip Jelačić in fighting in the Hungary and Austria in 1848: Battle of Pákozd and Schwechat. The key battles of the American civil war (1861-1865).

7. **The First World War (1914-1918).** The creation of a military-political alliances and the reasons the war broke out. Trench warfare and tactics to penetrate enemy defensive lines. Infantry of opposing sides with a focus on the activities and equipment of British and German troops. The German system of trenches. The use of armored vehicles, aircraft, submarines and battle gases. The battles with heavy losses in manpower: Verdun and the Somme (1916). Characteristics of the conflict in the Western and the Eastern Front. *Kaiserschlacht*. The entry of the United States in the war.

8. **The Second World War (1939-1945).** German attack on Poland (1939). German conquest of Western Europe and Japanese conquests in Asia and the Pacific. German *Blitzkrieg* and coordination of the various military branches. Operation *Barbarossa*. Milestones in War: Air Battle of Britain (1940), battle of Stalingrad and El Alamein (1942). Allied landing in Normandy in 1944. Operation *Market Garden*. The role of armored units in the Battle of Kursk (1943) and in the Ardennes (1944). The victory of the Red Army on the Eastern Front. The economy in the service of war. The use of a nuclear bomb. The military situation in Yugoslavia.

9. **The Cold War and the wars between 1945 and 1990.** The characteristics of the military forces of NATO and the Warsaw Pact. The arms race: nuclear arsenals and intercontinental ballistic missiles. The Cuban Missile Crisis. American intervention in Korea, Indochina, Latin America and Southwest Asia, the Soviet intervention in Afghanistan, the Israeli-Arab wars, Britain in the war for the Falklands.

10. **Republic of Croatia in the War for independence 1991. – 1995.** Aggressor forces and their occupation of Croatian national territory. The organization of defense in 1991. Battle of Vukovar in 1991. The establishment of professional troops. The first military operations of the Croatian army for the liberation of the occupied territory. Operation *Maslenica* (1993) in northern Dalmatia. Operation *Bljesak* (1995) in Western Slavonia. The preparation, course and complete success of Operation *Oluja* (1995).

Exercises:

1. **Greece and Macedonia in the war against Persia.** (Reading and analysis of selected passages from historical sources)
2. **Roman army - the best war machine of the ancient world.** (Reading and analysis of selected passages from historical sources)
3. **Wars in medieval Europe.** (Reading and analysis of selected passages from historical sources)
4. **The Ottoman army in the eyes of European chroniclers** (Reading and analysis of selected passages from historical sources)
5. **American Revolutionary War** (Reading and analysis of selected passages from historical sources)
6. **Napoleon: An example of great general** (Reading and analysis of selected passages from historical sources)

	7. **Great battles of WW I** (Reading and analysis of selected passages from historical sources) 8. **Great battles of WW II** (Reading and analysis of selected passages from historical sources) 9. **The Cold war** (Reading and analysis of selected passages from historical sources) 10. **The Republic of Croatia during the war for independence 1991. – 1995.** (Testimonies of veterans of the Croatian Army)

Format of instruction	☑lectures ☐seminars and workshops ☑exercises ☐*on line* in entirety ☐partial e-learning ☐field work	☐independent assignments ☑multimedia ☐laboratory ☐work with mentor ☐ (other)
Student responsibilities	Attendance, participation in discussions, writing essays, taking the quizzes and exams.	

Screening student work*(name the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1	Research		Practical training	0,5
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Midterm/ End of term exams	0,5	Oral exam		(Other)	
	Written exam	1	Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

There are two tests and if the student does not pass (50% success), he/she must take the final exam (written and oral if necessary).

Continuous evaluation of students' performance

Evaluation elements	Achievement (min.%)	Portion of the final grade (%)
The presence in lectures and in exercises	90	20
I midterm exam	50	40
II midterm exam	50	40
Total		100

Final examination:

Evaluation elements	Achievement (min.%)	Portion of the final grade (%)
The presence in lectures	90	20
Exam (written and oral)	50	80
Total		100

Grading scale:

Points (%)	Criterion	Grade

0-49	Does not meet the minimum criteria	Fail (1)
50-64	Meets the minimum criteria	Sufficient (2)
65-79	Average success with noticeable faults	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Michael Howard, *War in European History*, Oxford University Press 2009.		YES
	Christer Jorgensen, *Great Battles, Decisive Conflicts That Have Shaped History*, Parragon Inc, Bath, England, 2007.		YES
	Simon Anglim, Phyllis G. Jestice, Rob S. Rice, Scott M. Rusch, John Serrati, *Fighting techniques of the ancient world, 3000 BC – AD 500: Equipment, combat skills and tactics*, Amber Books, London 2013.		YES
	Helen Nicholson, *Medieval warfare: theory and practice of war in Europe 300-1500*, Palgrave Macmillan, Basingstoke 2004.		YES
	Jeremy Black (ed.), *War and the world: military power and the fate of continents 1450-2000*, Yale University Press, New Haven 2000.		YES
Optional literature (at the time of submission of study programme proposal)	Philip Sabin, Hans van Wees, Michael Whitby (eds.), *The Cambridge history of Greek and Roman warfare, vol. II,Rome from the late Republic to the late Empire*, Cambridge University press 2008. Kurt A. Raaflaub, Nathan S. Rosenstein (eds.), *War and Society in the Ancient and Medieval Worlds. Asia, The Mediterranean, Europe, and Mesoamerica*, Harvard University Press 1999. Martin Marix Evans, *Battles of WW1*, Arcturus Publishing, London 2008. C. L. Sulzberger, *World War II*, Mariner Books, New York, 1985. Zdenko Radelić, Davor Marijan, Nikica Barić, Albert Bing i Dražen Živić, *Stvaranje hrvatske države i Domovinski rat*, Summary, Zagreb 2006. Davor Marijan, Sudionici i osnovne značajke rata u Hrvatskoj 1990. - 1991., *Časopis za suvremenu povijest* 40 (2008), Summary, 47-63. Davor Marijan, Bitka za Vukovar 1991., *Scrinia Slavonica* 2 (2002), Summary, 367-402. Matthew Hughes, William J. Philpott (eds.), *Palgrave Advances in Modern Military History*, New York - Palgrave Macmillian, 2006. Peter Paret, *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, Oxford University Press, Oxford 1991.		
Quality assurance methods that ensure the acquisition of exit competences	Keeping records on the activities of students, attendance list, teaching supervision		
Other (as the proposer wishes to add)			

4.11.3.8 Hydroacoustics and Ship Physical Fields

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">HYDROACOUSTICS AND SHIP PHYSICAL FIELDS</td></tr>
<tr><td>Code</td><td>VPO112</td><td>Year of study</td><td colspan="4">2nd</td></tr>
<tr><td>Course teacher</td><td>Maja Škiljo, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">3</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Darija Jurko, M.Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">20</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">To acquire knowledge about the on board hydro acoustic systems. To learn about ship physical fields (SPF) and underwater explosion (UE).</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Completed 2nd semester of the Naval Studies programme.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">1. To understand basic principles of hydro acoustics and learn how to use the ship's underwater detection systems
2. To understand the echolocation equation, and explain the wave phenomena of sound propagation in the sea
3. To understand the principles and characteristics of hydro acoustic transducers
4. To understand the principles of underwater transducers
5. To explain why ship emits the acoustic field, what its characteristics are, and its impact on mine weapons
6. To understand the cause and the nature of ships magnetic field, and its application in underwater mines.
7. To understand ships hydrodynamics, its application in underwater mines.
8. To understand the destructive forces of an underwater explosion.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:
1. Introduction, 1 (introduction to the subject, basic concepts)
2. Sound field, 1 (the concept of sound and sound field, the sound intensity, units)
3. Hydro location equations, 1 (active and passive hydro location)
4. Propagation of sound in sea, 2 (introduction, parameters, wave propagation laws and phenomena, bathythermography)
5. Hydroacoustic transducers, 2 (conversion of electrical energy to acoustic and vice versa, converters features)
6. Underwater detection systems, 2 (active and passive sonar, stationary detection systems, radio hydroacoustic buoys, echo sounders)
7. The definition of the system for underwater location, 2 (definitions, elements of the system)
8. The underwater search system PMS 2000, 2 (components, use, application in surveillance of waterways)</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">9. Ships detectability, 2 (detectability of modern vessels, detectability in mine warfare, important aspects of SPF for mine warfare, use of SPF in mine warfare)
10. Ships acoustic field, 4 (sea noise, vessels' noise, methods for diminishing of vessels' noise, the use of ships acoustic field in mine warfare)
11. Ships magnetic field, 5 (the Earth's magnetic field, natural magnetic noise, the cause and nature of ships magnetic field, application in underwater mines)
12. Ships hydrodynamics, 4 (the cause of hydrodynamic pressure, forming of ships hydrodynamic field, the use of ships hydrodynamics in mine warfare, countermeasures for hydrodynamic triggered mines)
13. Underwater explosion, 2 (the physics of the underwater explosion, calculation of the radius of destruction, the causes of destructive effect)

Exercises:
1. Hydro acoustic transducers, 2
2. The use of ships hydro acoustic devices, 4
3. Features of ships acoustic field, 2
4. Features of ships magnetic field, 3
5. Features of ships hydrodynamics, 2
6. Features of UE, 2</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒lectures
☐ seminars
☒ exercises
☐on line in entirety
☐ field work</td><td colspan="3">☒ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Class attendance is registered and obligatory for lectures and exercises. In order to take the exam and earn ECTS credits, full-time students are required at least 95% of lecture attendance and 100 % of exercises attendance. Doctor's note is not accepted as justification or replacement for class attendance. If students didn't attend classes due to illness or any other justified reason and are missing 20 % of class attendance, they can catch up the work in a form of additional tasks or consultations. All other students, i.e. the ones who have less than 50 % of class attendance are not entitled to take the exam and have to enrol in the course again next academic year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td>1.9</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work

There are two tests.
If the student does not pass the tests (min 50% of test score), then he/she takes the oral exam. If the student passes all tests, he/she gets the average grade.
For taking the exam and obtaining the professor's signature, it is necessary to have 95 % of lecture attendance and 100 % of exercises.

Continuous evaluation of students' performance</td></tr>
</table>

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance and exercises involvement	95	30
I TEST	50	35
II TEST	50	35
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	95	30
Exam (oral)	50	70
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	1. Principles of underwater sound 3rd edition, RJ Urick – Peninsula Publising Los Atlos, California, 1983.		YES
	2. Fundamentals of Shallow Water Acoustics, Boris Katsnelson, Valery Petnikov and James Lynch, Springer-Verlag New York Inc., United States, 2013.		YES
	3. Exploitation of a Ship's Magnetic Field Signatures, John J. Holmes, Morgan and Claypool publishers, 2006.		YES
	4. Fluid Mechanics, Richard W. Johnson, CRC Press; 1 edition, May 28, 1998.		YES
	5. Water Waves Generated By Underwater Explosion, Bernard Le Méhauté, Wspc April 16, 1996.		YES
Optional literature (at the time of submission of study programme proposal)	As the lecturer instructs.		
Quality assurance methods that ensure the acquisition of exit competencies	Student feedback via questionnaires and surveys, student attendance list, faculty classes supervision.		

Other (as the proposer wishes to add)	-

4.11.3.9 Physical Education

NAME OF THE COURSE	PHYSICAL EDUCATION						
Code	VPO113	Year of study	2nd				
Course teacher	Domagoj Bagarić, M.P.Ed.	Credits (ECTS)	0				
Associate teachers	Ivica Bajaj, M.P.Ed.	Type of instruction (number of hours in a semester)	L	S	E	F	
			0	0	30	0	
Status of the course	Mandatory	Percentage of application of e-learning					

COURSE DESCRIPTION	
Course objectives	The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Use part of the basic kinesiological motor knowledge about a certain kinesiological activity that is important for successful studying. Develop the abilities, characteristics and positive attitudes defined within the educational area of physical education which contribute to successful studying. Recognize the need and importance of regular exercise in order to preserve one's health and improve the quality of life. Perform basic kinesiological programs on one's own. Conduct the testing of anthropological characteristics. Plan an active rest (an active break during periods of study in one's free time). Develop tolerance, work habits and self-discipline.
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises:** 1. Regular testing of physical abilities 2. The development of functional abilities 3. The development of motor abilities 4. Fitness programs 5. Swimming 6. Naval pentathlon (naval obstacles, navy skills training area) 7. Navy skills training (rowing)
Format of instruction:	☐Lectures ☐ Seminars ☒ Exercises ☐ On-line in entirety ☐ Field work ☐ Individual assignments ☐ Multimedia ☐ Lab exercises ☐ Mentoring
Student responsibilities	Students are required to participate in exercises. Records of student attendance are also kept.

	Class attendance		Research		Practical training	

<table>
<tr><td rowspan="4">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
During the academic year, students are required to take two regular physical fitness tests to meet the established norms.</td></tr>
<tr><td rowspan="2">Required literature (available in the library and via other media)</td><td colspan="3">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="3"></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6"></td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competencies</td><td colspan="6">University survey and teaching supervision.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

4.11.4 2nd Year, IV Semester

4.11.4.1 Naval English II

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">NAVAL ENGLISH II</td></tr>
<tr><td>Code</td><td>PFP171</td><td>Year of study</td><td colspan="4">2</td></tr>
<tr><td>Course teacher</td><td>Adelija Čulić-Viskota, Ph.D.
Silvana Kokan, M.Ed.</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Davor Vodopija, M.Ed.</td><td rowspan="2">Type of instruction(number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">20</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Acquiring basic and specialized English language skills and competencies in order to work efficiently in a specific environment of a navy as well as meeting the requirements necessary to work within the NATO system.
Mastering presentation skills on navy topics
Acquiring communicative competencies in English for the purpose of ensuring safe sailing and sea environment protection.
Encouraging and developing students' cognitive abilities as well as developing basic language skills: listening, reading, writing and speaking.
Developing research skills and abilities of gathering, organizing and evaluating the information</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Successful completion of Naval English I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Upon completion of the course, students will be able to communicate in English, as follows:

- distinguish terminology in the area of ship's combat systems;
- categorize fleet support ships and service craft;
- categorize types of mine warfare ships;
- present mooring techniques;
- distinguish terminology related to towing;
- present ship safety systems;
- describe damage control.

.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:
1. Missiles and Rockets
2. Mines and Torpedoes
3. Guns
4. Marlinespike Seamanship
5. Mooring
6. Towing
7. Revision
8. Fleet Support Ships and Service Craft
9. Mine Warfare Ships
10. Boats
11. Boat Crews and equipment
12. Security
13. Safety and Emergency Response</td></tr>
</table>

	14. Damage Control 15. Revision **Exercises:** 1. Taking notes on different types of missiles 2. Describing future events / Writing: Completing the Training exercise report 1. Describing capabilities / Writing: Completing the notes on guns 2. Identifying a problem / Writing: Officer's daily disciplinary log 3. Describing past events / Writing: Mooring report 4. Checking for completion / Writing: Towing operation checklist 5. Offering solutions / Writing: the Lieutenant's report 6. Midterm exam 7. Describing upcoming events / Writing: the ship's UNREP report 8. Stating uncertainty / Writing: An article on different types of boats 9. Double-checking information / Writing an article on boat crews and equipment 10. Describing required actions / Writing: Security plan 11. Describing success and failure /Writing: An article on safety procedures 12. Stressing a point / Revision 13. End of term exam

Format of instruction:	☒lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☒field work	☒ independent assignments ☒ multimedia ☐ laboratory ☐ tutorials

Student responsibilities	**Full time students' responsibilities** Students are required to attend classes regularly and participate actively, bring class materials and prepare assignments on regular basis. The maximum of six hours of absence is allowed, including both, absence from the lectures or exercises. Class attendance is required in order to obtain the course teacher's signature at the end of a semester. In case students are denied the course teacher's signature, they are to re-enrol in the course the following academic year.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS valueof the course)*						
	Class attendance	1.5	Research		Practical training	
	Experimental work		Report		Independent study and homework (Other)	
	Essay		Seminar paper		(Other)	
	Midterm/End of term exams	1.5	Oral exam	1	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** Final exam comprises two parts, a written and oral exam. The written exam may be successfully completed by taking a midterm/end of term exams. Tested content is based on class materials and it comprises professional terminology and grammar. Students have an option to complete the written exam before the beginning of the examination period. In this case, at the final exam, students shall take only the oral exam. If students fail the midterm or end of term exam but fulfil the minimum of class responsibilities, they are allowed to take the entire final exam in the allocated examination period. It is required to achieve at minimum 50% of the points at the midterm/end of term exams or written exam in order to access the oral exam. Students

have to apply for the final exam in the examination period in order to gain access to the exam and in order to have the grade entered into the system.
Exam application and application withdrawal are done via Studomat, an online student portal.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance and activity level at exercises	max. 6 hours of absence during a semester	10
Midterm/End of term exams	50	40
Total		50 – in this case student does't take written exam

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Practical exam (written)	50	20
Theoretical exam (written and/or oral)	50	50
Pre-activities (including all elements of continuous evaluation)	100	30
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Fails to meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above average achievement with occasional mistakes	Very good (4)
90-100	Outstanding achievement	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
1. Taylor, J. i Goodwell, J. (2011.): Career Paths Navy Book 2, 3, Express Publishing		YES
2.Richard Bowyer, (2004): Campaign Dictionary of Military Terms, Macmillan Bloomsbury		YES
3. Graham Robertson, (2005): Shipshape - A Thematic Grammar, I.T.O. Srl		YES

Optional literature (at the time of submission of study programme proposal)

1. Smith, S. i Howell M., (2005.): Navy Life Two „Pre-intermediate“, Istituto Tecnico Orion
2. Smith, S. i Howell M., (2005.): Navy Life Two „Pre-intermediate“ – Exercises, Istituto Tecnico Orion

Quality assurance methods that ensure the acquisition of exit competencies	Students' questionnaire, attendance list, supervision of teaching
Other (as the proposer wishes to add)	

4.11.4.2 Technical Mechanics II

NAME OF THE COURSE	TECHNICAL MECHANICS II					
Code	VPS102	Year of study	2nd			
Course teacher	Damir Sedlar, Ph.D. Branko Klarin, Ph.D.	Credits (ECTS)	4			
Associate teachers	Živko Jurišić, M.Sc.Eng.	Teaching methods (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Familiarisation with basic principles of dynamics and their application in observing the influence of forces on body motion. Developing straightforward and logical way of thinking while analysing and solving practical engineering tasks in the area of dynamics of marine engineering elements and constructions. Recognising the fundamentals of the statics of the fluids and pressure forces on the walls surrounding inactive fluids. Familiarisation with the application of basic principles of the fluid dynamics of which will facilitate solving tasks related to fluids motion, which is essential in marine engineering practice.					
Course enrolment requirements and entry competencies required for the course	Technical Mechanics I					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	**Student will:** 1. Define and understand the fundamentals of rigid body dynamics within various coordinate systems. 2. Explain the notion of work, power, mechanical energy, linear and angular impulse and momentum and mass geometry. 3. Solve and analyse simple examples the dynamics of translation, rotation and plane rigid body motion. 4. Distinguish physical properties of fluids and basic values in fluid statics. 5. Calculate the force exerted on the flat surface and force components on the curved surface in still liquid. 6. Understand the effect of buoyancy and calculate the buoyancy and stability of the floating body. 7. Apply the Bernoulli equation in solving practical examples of fluid flows and leak in simple hydrodynamic devices. 8. Formulate and calculate energy losses in laminar and turbulent flow of the fluids through pipelines and changed cross-sections of the pipelines. 9. Create prerequisites for understanding and acquiring new knowledge in other courses within the curriculum.					

Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Dynamics. Dynamics of the particle. Equations of motion. D'Alembert's principle. Work and power. Kinetic and potential energy. 2. Linear impulse and momentum. Angular impulse and momentum. 3. Dynamics of the rigid body. Geometry of the mass. Translation. 4. Rotation around fixed axis. Dynamic reactions in the bearing. 5. Plane motion. Vibrating spring mass system. 6. Fluid mechanics. Introduction. Basic notions, pressure, density, stress, viscosity. Fluid statics. Change of pressure in liquids. 7. Pressure force on the flat and curved surfaces. Calculation of the wall thickness of the pipeline under pressure. 8. Hydrostatic buoyancy. Archimedes' principle. Stability of emerged body and vessels. 9. Fluid kinematics. Flow types. Equation of continuity. Flow of fluids through pipelines. Venturi tube. 10. Fluid dynamics. Bernoulli's equation for ideal and real liquids. Measurement of the flow by means of the Venturi tube. 11. Discharge of the liquid through small and large openings. 12. Principle of impulse and momentum. Equation of momentum. Laws of similarity. Geometrical, kinematic and dynamic similarity. Reynold's and Froude's number. 13. Real fluid flows. Determining friction losses in laminar and turbulent flows. 14. Resistance during the flow of fluids. Calculation of all losses while fluids are passing through the pipeline. 15. Flow over body. Friction resistance, shape resistance and overall resistance while a body is passing through a fluid. Cavitation. Causes of cavitation. Cavitation number. Cavitation erosion. Types of cavitation during the flow of fluid or the motion of a body through a fluid. **Exercises**: 1. Application of the equations of motion and D'Alembert's principle at the forced motion of material particles. Examples of calculation work, power, kinetic and potential energy of particles. 2. Examples of the application of linear impulse and momentum and angular impulse and momentum. 3. Determination of moments of inertia of simple homogeneous rigid body and moment of inertia for parallel axes. Solving problems in rotation of the rigid body using the equations of motion. 4. Calculation of reactions in supports, kinetic energy and angular momentum at the rotation of the body. 5. Solving problems at planar motion of the rigid body using the equations of motion. Calculation of kinetic energy and momentum. 6. Basic dimensions and units in fluid mechanics. The units of viscosity. Pressure measurement and calculation of viscosity. 7. Calculation of forces fluid pressure on the horizontal and inclined surface. The action of the pressure forces on the curved surface. Determination of the thickness of the pipe wall. 8. Calculation of the buoyancy of submerged and floating bodies. Determination of stability of floating objects. 9. Use the continuity equation. Determination of velocity and flow in the fluid flow through the pipeline 10. Venturi tube. 11. Example of application of Bernoulli's equation at the flow of an ideal fluid. 12. Examples of discharge of liquid through the small and large opening. 13. Application of principle of impulse and momentum in determining the jet impact force on fixed and mobile plate or blades. 14. Calculation of friction coefficients for different types of flow and the roughness of the pipe. Determination of friction losses and local resistance in the fluid flow.

	15. Example of calculations of characteristic values (speed, pressure, flow, losses) of simple pipe system.
Format of instruction:	X lectures ☐ seminars and workshops X exercises ☐ on line entirely ☐mixed e-learning ☐ field lectures ☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring
Student responsibilities	Class attendance is compulsory for full-time students, which means that for obtaining the course teacher's signature, the attendance of at least 95% at lectures and 100% at exercises is required. Students who have not attended 80% of lectures and /or exercises are allowed to, if they submit absentee note, compensate for the classes in the form of consultation and/or with seminar papers. In case of insufficient number of arrivals to class, students are not eligible for the signature and shall enrol in the course again next academic year. Students have the opportunity to pass the exam through continuous evaluation during the semester by taking two midterm exams. The students are required to take both midterm exams. Students who do not pass the midterm exams, and have the signature, are required to take the written exam in the examination period.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Lecture attendance	1,2	Research		Practical training	
Experimental work		Paper		Homework	
Essay		Seminar paper		(Insert other)	
Midterm exams	2,8	Oral exam		(Insert other)	
Written exam		Project		(Insert other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Class attendance is compulsory for full-time students, which means that requirement for obtaining signature is a minimum 95% of lecture attendance and 100% of the exercises.

The student may be exempt from the written exam if she/he has taken successfully two (2) midterm exams that are written during the semester.

The first midterm exam includes the first to sixth week of lectures and it is taken in the 7th week of classes. The second midterm exam includes the seventh to the fourteenth week of lectures and is taken in the 15th week of classes. Sample questions for the students are available on the web. The midterm exams are necessary to achieve a minimum 50% of points. Students who do not join the first midterm exam for objective reasons or do not achieve the minimum percentage of points have the opportunity to take the written exam.

Students who do not pass the midterm exams and have obtained a signature are required to sit for written examination in the examination period.

The final evaluation includes attendance of classes, results of the midterm exam / written exam and oral test. Same assessment criteria apply to tests as well as to continuous assessment.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance at lectures and active participation in exercises	min. 95% attendance of lectures, 100% attendance of exercises	10%
I Midterm exam	50%	45%
II Midterm exam	50%	45%

Final examination:

	Elements of evaluation	**Achievement (min.%)**	**Portion of the final grade (%)**
	Midterm exam or written exam	50%	65%
	Oral exam	50%	25%
	Previous activities (including any indication of continuous assessment)	100%	10%
	In total		100%

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability through other media**
Required literature (available in the library and via other media)	1. Hibbeler R.C., Engineering Mechanics-Dynamics, Pearson Prentice Hall, New Jersey 2010.	1	yes
	2. Crow C.T., Elger D.F., Williams B.C., Roberson, J.A., Engineering fluid mechanics-9th ed., John Wiley & Sons, Inc., New York 2009.	1	yes
	3. Çengel A.Y., J.M. Cimbala, John M., Fluid mechanics: Fundamentals and applications, McGraw-Hill Companies, Inc., New York 2006.	1	yes
Optional literature (at the time of submission of study programme proposal)	1. Kulenović, Z., Tehnička mehanika za pomorce, Pomorski fakultet Sveučilišta u Splitu, Split 2013. 2. Jecić, S., Mehanika II, Tehnička knjiga, Zagreb 1989. 3. Pečornik, M., Tehnička mehanika fluida, Školska knjiga, Zagreb, 1989.		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.4.3 Elements of Maritime Transport II

NAME OF THE COURSE	**ELEMENTS OF MARITIME TRANSPORTII**						
Code	VP110	Year of study	2nd				
Course teacher	Marko Katalinić, Ph.D.	Credits (ECTS)	5				
Associate teachers		Type of instruction	L	S	E	F	

	Ana Karaman, M. Eng.	(number of hours in a semester)	30	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning	No e-learning			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to introduce students to the: -intact stability -damaged stability - static and dynamic stability					
Course enrolment requirements and entry competencies required for the course						
Learning outcomes expected at the level of the course (4-10 learning outcomes)	-Establish initial transverse stability of the vessel and get to know the elements of transverse stability. -Analyse the effects of different weight shifts to the elements of transverse stability of the ship. -Define the impact of loading and unloading to ship transverse stability. -Recognize the free surface effect and to know its impact on the elements of transverse stability. -Analyse the stability of the ship according to different criteria. -Explain and interpret the longitudinal stability of the ship and to know the elements of longitudinal stability. -Examine the effect of loading and unloading to longitudinal stability of the ship. -Define the elements of the dynamic stability of the ship and analyse the stability of the ship in damaged condition.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 01. Division of the ship's stability according to different criteria, basic features and flotation conditions. 02. Initial transverse stability of the ship. 03. Effect of vertical horizontal and combined shifting of masses on-board on transverse stability of the ship. 04. Effect of cargo loading on ship transverse stability. 05. Effect of cargo loading and unloading with ship heavy lift cranes on transverse stability 06. Free surface effect on the initial transverse stability of the ship. 07. Transverse stability at high angles of inclination, an indicator of stability at high angles of inclination. 08. The construction of ship's stability righting arm curve. 09. Initial heel and trim, calculating the ship's centre of gravity (transverse stability). 10. The longitudinal stability of the ship. 11. Impact of the weight shifts to the longitudinal stability, impact of loading and unloading to the longitudinal stability. 12. Calculating the ship's centre of gravity (longitudinal stability). 13. Dynamic stability of the ship, the influence of the ship size and dimensions on stability. 14. Stability of the ship in damaged condition and special cases. 15. Trim and stability book. **Exercises** 01.Shipdocuments (hydrostatic tables and diagrams). 02. Using hydrostatic tables and diagrams. 03. Numerical examples with shifting weights on-board. 04. Numerical examples with loading and unloading of cargo. 05. Numerical examples with loading by ship crane. 06. Free surface effect calculation.					

<table>
<tr><td></td><td>07. Stability at larger angles of inclination.
08. The longitudinal stability of the ship-elements. Midterm exam 01.
09. Numerical examples with influence of weight shifting on longitudinal stability.
10. Longitudinal stability. Numerical examples: loading cargo.
11. Longitudinal stability. Numerical examples: unloading cargo.
12. Stability of the damaged ship.
13. Stability during ship docking.
14. Use of computers in the analysis ship stability.
15. Repeatition. Midterm exam 02.</td></tr>
<tr><td>Format of instruction:</td><td>☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work

☒ individual assignments
☐ multimedia
☒ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td>Lectures and exercises are compulsory. The records of class attendance and practical exercises are kept continuously during the semester. Requirement for obtaining signatures is compulsory attendance of at least 80% of classes (lectures and exercises) and 100% of practical exercises. Obtaining a signature is a condition for taking an exam.
Absentee notes cannot justify absence from class.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td>0,5</td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>3</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>Assessment and evaluation of full-time students' work
Class attendance is compulsory. Students are required to attend at least 80% of lectures in order to obtain the course teacher’s signature.
Testing includes 2 midterm exams. The first midterm exam that includes lectures 1-7 is in the eighth week of classes, and the other midterm exam with lectures 8-14 is in the 15th week of classes.
Sample questions for the midterm exam are available.
At each midterm exam it is necessary to achieve a minimum 60% of the points. Students that cannot sit for the midterm exam for objective reasons or do not achieve the minimum percentage, may retake the midterm exam in the 9th week.
Students who do not pass the first midterm exam cannot access the second midterm exam.
The final evaluation includes class attendance, test results and individual assignments.

Continuous evaluation students' performance
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the fina grade (%)</th></tr>
<tr><td>Attendance of lectures and active participation in exercises</td><td>80</td><td>15</td></tr>
<tr><td>Midterm exam I</td><td>60</td><td>40</td></tr>
<tr><td>Midterm exam II</td><td>60</td><td>40</td></tr>
<tr><td>Individual assignments</td><td>100</td><td>5</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td>Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-59</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>60-69</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>70-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-89</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>90-100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table>
Students who do not pass the midterm exams during the semester and have obtained the signature are required to take the exam in the examination period.</td></tr>
<tr><td>Required literature (available in the library and via other media)</td><td>
<table>
<tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr>
<tr><td>Derrett & Barrass: Ship Stability for Masters and Mates</td><td></td><td>YES</td></tr>
<tr><td>Croatian Register of Shipping: Part 4 Stability</td><td>2</td><td>www.crs.hr</td></tr>
</table></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td>1. C.S.Moore: Intact Stability, SNAME
2. SNAME: Ship Design and Construction I & II,2003
3. Barrass, B: Ship Stability for Masters and Mates
4. Dokkum, K.: Ship Knowledge, Dokmar
5. Dokkum, K.: Ship Stability, Dokmar</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td>Questionnaires, evidence lists of the students, faculty supervision.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td></td></tr>
</table>

4.11.4.4 Work Organisation and Management On Board

<table>
<tr><th>NAME OF THE COURSE</th><th colspan="5">WORK ORGANISATION AND MANAGEMENT ON BOARD</th></tr>
<tr><td>Code</td><td>VPN111</td><td>Year of study</td><td colspan="4">2nd</td></tr>
<tr><td>Course teacher</td><td>Lea Vojković, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Luka Mihanović, Ph.D.
Jakša Mišković, M. Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">30%</td></tr>
<tr><th colspan="6">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="5">Introduction to organization of the multinational crew with regard to cultural and social differences. Learn to plan work on board. Provide insight into the correct behaviour in emergencies. Teach students leadership (issuing orders).</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of</td><td colspan="5">Organize the crew, and plan activities and exercises on board.</td></tr>
</table>

<table>
<tr><td>the course (4-10 learning outcomes)</td><td>Identify specific dangerous situations as dangers on board (egg, stress, alcohol, workload, distinct authority, etc.) and analyse the characteristics of seafarers (attitude, hard work, authoritativeness, positive initiative).
Develop a good or bad organizational structure of work on board ship.
Analyse cultural differences of multinational crews, and with this in mind optimally organize the crew.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td>Lectures
1. The management structure on board. Organization of duties and responsibilities on board.
2. Ergonomics and design of ships, human error due to automation
3. Attitudes, values, personality, attributes of crew members. The application of the ISM Code.
4. ISM Code. Keeping watch and relieving watch keeping.
5. Organization of drills on board.
6. Fatigue on board, planning of working hours, the ILO convention.
7. Contracts for seafarers according to ITF.
8. Stress, fears, human limitations.
9. Mobbing, misuse of drugs and alcohol.
10. Short-term strategy, leadership, types of leadership, authority, positive initiatives.
11. Communication on board. Decision-making in emergency situations. Conducting meetings. Teamwork.
12. Cultural differences, social differences (individualism, collectivism, parochialism, short and long power distance).
13. The study of cases of distress caused by errors.
14. MCRM software package.
15. Videotel software.

Exercises
1. Human performance and limitations.
2. Attitudes (positive and negative attitudes).
3. Situational and safety awareness.
4. Cultural differences (different nationalities crew management).
5. Communications and meetings (safety, pre-arrival and pre-departure etc.).
6. Authority (balance between authority and assertiveness).
7. Proper challenge and response.
8. Short-term strategy and planning.
9. Workload, planning working hours and hours of rest.
10. Human-Automation Interaction (human factors and ergonomics)
11. Teamwork (leadership and the importance of teamwork within a vessel)
12. Human error management (safe management and operation of ships and for the implementation of a safety management system (SMS)).
13. Leadership styles (Autocratic, bureaucratic, charismatic etc.).
14. Effective decision making.
15. Videotel (students result reports).</td></tr>
<tr><td>Format of instruction:</td><td>☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☒ partial e-learning
☐ field work
☐ individual assignments
☒ multimedia
☐ lab exercises
☐ mentoring
☒MCRM packages
☒ Videotel</td></tr>
<tr><td>Student responsibilities</td><td><table><tr><th>Type of activity</th><th>Criteria</th></tr><tr><td>Regular attendance</td><td>95%</td></tr><tr><td>Exercise lessons</td><td>100%</td></tr><tr><td>MCRM software</td><td>100%</td></tr></table></td></tr>
</table>

	Videotel			100%		
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course*	Class attendance	1,1	Research		Practical training	
	Experimental work		Report		Independent study and homework (other)	
	Essay		Seminar paper		(Other)	
	Midterm exam	1	Oral exam	0,9	(Other)	
	Written exam	1	Project		(Other)	

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students' performance:

Attendance is mandatory for students, ie the condition for obtaining a signature is attendance at a minimum of 95% of lectures. Two mid term test are written in the semester. The first, which includes the 1st to 7th lectures, is written in the 7th week of classes, and the second, which includes the 8th to 15th lectures, is written in the 15th week of classes. Examples of questions for the mid term tests to students are available on the intranet. At each progess test, it is necessary to achieve a minimum of 50% of points for passing. Students who do not attend or pass the 1st mid term test cannot take the second colloquium. Students who have more than allowed absences for lectures can make up for classes by e-learning. Exercises can be reimbursed only in the CBT clasroom no later than one month after the end of classes. The final grade includes class attendance, colloquium results and individual / team assignments. Students who do not pass the colloquium during the semester, and have a signature, are required to take a written exam within the exam period and it is subject to the same assessment criteria as for continuous knowledge testing.

Elements of evaluation	**Achievement (min.%)**	**Portion of the final grade (%)**
Course attendance	95	20
MCRM CBT	95	20
Mid-term test (optional)1	80	50
Written exam (optional)2	80	50
Oral exam (optional)3	80	50
Videotel	80	10

1 or 2 or 3 optional requirement. In total 100.

Final examination:

Elements of evaluation:	**Achievement (min.%)**	**Portion of the final grade (%)**
Written test (or oral optional)	80	80
Videotel	80	20

Grading scale:

Points (%)	Criterion	Grade
75-80	Does not meet minimum criteria	Fail (1)
80-85	Meets minimum criteria	Sufficient (2)
85-90	Average success with noticeable mistakes	Good (3)
90-95	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Student Workbook, MCRM Maritime Crew Resource Management, OAA, 2010.		On line Intranet
	Vidan, P.: Presentations for lessons, approved by Faculty of Maritime Studies, Split		On line Intranet
	Videotel CBT, movies		On line Internet
Optional literature (at the time of submission of study programme proposal)	1. Bridge Team Management, Second Edition, Captain A. J. Swift FNI, 2004 2. Bridge Watchkeeping, Second Edition Various authors, 2003 3. Stranding sand their Causes Captain R. A. Cahill FNI, 2002 4. Leadership Throughout R. Jeffery MNI, 2007		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching inspection		
Other (as the proposer wishes to add)			

4.11.4.5 Marine Power Systems

NAME OF THE COURSE	MARINE POWER SYSTEMS					
Code	VPS103	Year of study	2nd			
Course teacher	Nikola Račić, Ph.D.	Credits (ECTS)	4			
Associate teachers	Karlo Bratić, M.Sc.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Introduce students to the processes and designs of marine propulsion systems and marine auxiliary power systems. Clarify their features, management, and handling that is directly or indirectly in the domain of deck officer. Introduce students to the systems of remote control and monitoring of the main propulsion machinery from the bridge, and the alarm system and automatic protection of the main propulsion engine.					
Course enrolment requirements and entry competencies required for the course	Engineering Mechanics Marine Electrical Engineering and Electronics I					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	**Student will:** 1. Discern and describe the processes, elements and performance of marine propulsion systems. 2. Identify and describe the function and performance of marine auxiliary power systems for securing energy flows to propulsion system, safety and protection of the ship, and life and comfort on board.					

	3. Analyse and present procedures of preparation and management of systems that directly or indirectly make running of the main propulsion engine effective. 4. Analyse and describe the function of system pipeline and equipment necessary for safe navigation. 5. Connect basic knowledge of technical concepts of marine engineering and physical units to connect cause-effect dependence between the measured values and alarm system limit values and automatic protection of the main propulsion engine.	
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures**: 1. Ship's propulsion systems. 2. Propeller shaft and designs of ship's propulsion units. 3. Ship's diesel engines. 4. Fuel system. Lubricating system. Cooling system. Coupling and reduction gear designs. Air motor-starting systems. 5. Steam turbine propulsion system. 6. Auxiliary boilers. 7. Pumps. 8. General service pipeline systems. 9. Ship's wastewater. 10. Refrigeration plant, air-conditioning and ventilation. 11. Deck machines. 12. Steering gear. 13. Generators, alternators and electrical energy distribution. 14. Managing and controlling of ship power energetic complex. 15. Marine engineering expressions. **Exercises:** 1. Analysis of marine propulsion systems 2. Analysis of diesel engine propulsion system on the engine simulator. 3. Analysis and handling of seawater and freshwater cooling systems. 4. Analysis and handling of fuel and lubricating oil systems. 5. Analysis and handling compressed air system. Preparing and starting main engine and auxiliary machinery. 6. Preparing and starting steam generator. Analysis of fuel, air, condensate and feed water systems. 7. Preparation for work and starting steam turbine. 8. Analysis of volumetric and dynamic pumps and elements of pipelines. 9. Analysis of the functionality of bilge and ballast systems. 10. Preparation and operation of fresh water generator. 11. Steering gear control system, control methods and emergency steering. 12. Steam compression refrigeration system, analysis and operation of the system. 13. Placing in the work generators - parallel operation of synchronous generators. 14. Automatic operation of the ship's machinery system, functioning in the event of failure and excessive circumstances. 15. Calculation of fuel consumption.	
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety	☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring

	☐ partial e-learning ☐ field work	☐ (other)

Student responsibilities

Students' obligations:

Class attendance is compulsory for all students meaning that the requirement for obtaining the course teacher's signature is attendance of 80% at lectures and exercises. Students who have not attended at least 80% at lectures and /or exercises are allowed to, if their absence is justified, attend compensation classes in the form of consultation and/or with seminar papers. In case of insufficient class attendance students are not eligible for signature and shall enrol in the course again next year.

Students have the opportunity to pass the exam through continuous evaluation during the semester by taking two midterm exams. Students who do not pass the midterm exams and have obtained a signature, are required to take the written exam within the examination period. Students who have obtained enough points during semester are required to apply for the exam in the examination period.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Class attendance	1	Research		Practical training		
Experimental work		Report		(Other)		
Essay		Seminar paper		(Other)		
Midterm exams	1,5	Oral exam		(Other)		
Written exam	1,5	Project		(Other)		

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Active participation in classes and exercises is monitored during the semester. The student may be exempt from taking written exam if he/she has passed the two midterm exams written during the semester.

The first midterm exam includes the first to sixth week of lectures and is taken in the 7th week of classes. The second midterm exam includes the seventh to fourteenth week of lectures and it is taken in the 15th week of classes. Sample questions for the students are available on the web. Students must achieve a minimum 50% of points in order to pass the midterm exams. Students who do not take the first midterm exam for objective reasons or do not achieve the minimum percentage will have the opportunity to retake the exam in the 15th week, and the second midterm exam can be retaken within the final examination period.

The final evaluation includes the presence in the classroom and exercises, and the results of the midterm exams.

Continuous evaluation of students'performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Course attendance and participation	80% attendance	10
Midterm exam I	50	45
Midterm exam II	50	45

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written exam	50	65
Oral exam	50	25
Previous activities (including any indication of continuous assessment)	100	10
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. D. A. Taylor: „Introduction to Marine Engineering“, ISBN 0 7506 2530 9, Elsevier Butterworth-Heinemann, 2003.	1	YES
Optional literature (at the time of submission of study programme proposal)	J. S. Carlton: „Marine Propellers and Propulsion“, ISBN: 978-07506-8150-6, Butterworth-Heinemann, 2007. K. Mollenhauer; H. Tschoeke: „Handbook of Diesel Engines“, ISBN 978-3-540-89082-9 e-ISBN 978-3-540-89083-6, DOI 10.1007/978-3-540-89083-6, Springer Heidelberg Dordrecht London New York, 2010.		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty		
Other (as the proposer wishes to add)			

4.11.4.6 Marine Electrical Engineering and Electronics II

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">MARINE ELECTRICAL ENGINEERING AND ELECTRONICS II</td></tr>
<tr><td>Code</td><td>VPE102</td><td>Year of study</td><td colspan="4">2nd</td></tr>
<tr><td>Course teacher</td><td>Igor Vujović, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Tomislav Peša, M. Eng.
Dean Sumić, M. Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">10</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Mastering of basic laws of alternate electric current circuits, applicable to other study courses and practical work. Particular attention will be paid to the application of aquired knowledge and competences to the operation of shipboard electric devices and systems.
Course objective is also to aquire knowledge of the operational prinicples of electrical circuits, generation units, accumulation, distribution and loads of electric energy aboard ships. Electronic components principles are studied. Planar technology is explained for manufacturing of electronic devices. The objective is also to master fundamentals of recieving, transmiting and propagation of electomagnetic waves, as well as parts of radiocommunication devices aboard.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Marine Electrical Engineering and Electronics I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Upon successfully mastering the course, the student is enabled to:
Define and use all the laws of alternating electric current circuits.
Analyse and calculate complex alternating current circuits.
Plan and perform measurements in alternating, single-phase, and three-phase systems.
Master safety measures at working with the alternating current.
Present basic principles of electrical engines operations.
Compare DC, single-phase, and three-phase AC systems of energy distribution aboard.
Recognize safety components of ship’s electical gird.
Explain priniciples of operation of high-frequency electronic tubes.
Explain advantages of the planaer technology.
Present fundamental prinicples of EM waves generation and propagation, and indetify impact factors for EM waves propagation.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:
1. AC circuits: Variable currents. Alternating current generation principle. Periodicity. Frequency, circular frequency, average valus of the AC, factors (shape, mean, pick). Symbolic procedure of alternating values presentation.
2. AC values expressed with complex numbers. Fundamental laws applied to AC circuits. Impedance, reactance, admittance. Phase angle.</td></tr>
</table>

	3. Ideal loadings in AC circuits. Skin effect. Resistance triangle. Serial, parallel and combination circuits consisted of electrical loads. Phasor diagrams. 4. Serial and parallel resonance. Oscillating circuits. Oscillating circuits' energy with and without dampening. 5. Alternating current circuit power. Power triangle. Power factor. Power factor compensation. Maximal power transfer theorem. 6. Solving AC grids. Transient phenomenon. Non-sinusoidal values. 7. Two-port networks. 8. Three-phase systems. Rotating magnetic field. 9. Transformers. 10. Operating principles of rotational electric engines. Generators: three-phase synchronous, DC. Motors: three-phase synchronous, DC, single-phase asynchronous. 11. Electron tubes. High frequency electronic tubes. 12. Basics of semiconductor technology. Planar manufacturing process. Semiconductor components. 13. Physical fundamentals of electromagnetic waves. EM waves propagation. 14. Principles of radio transmitter and receiver. Modulation. 15. IMO requirements. **Exercises:** 1. Current values of AC quantities. Phasors diagrams. 2. AC quantities measurement by the oscilloscope. 3. Adjustment of various wave shapes by oscilloscope. 4. Serial connection of resistor, coil, and capacitor. 5. AC circuit power. 6. Resonance. 7. Power factor compensation. 8. Three-phase source. 9. Two port circuits. 10. Mono-phase transformer. 11. Loads' star and triangle connections. 12. Simulation and animation of EM waves and oscillating circuits. 13. RLC serial oscillating circuit. 14. Half-wave rectification. 15. Full-wave rectification	
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ individual assignments ☒ multimedia ☒ lab exercises ☐ mentoring ☐ (other)
Student responsibilities	Students have to attend 80% of lectures, and 100% of laboratory exercises. Students, who do not meet this requirement, need to make up for missing exercises in regular lecture calendar. If they do not do so, they have to re-enrol the course the following academic year in order to approach the exam. Students who have obtained enough points, have to apply for the exam by WEB service ("Studomat") for the examination term. Students who do not pass midterm exams, have to sit for the final exam (if they have 80% attendance for lectures and 100% for lab).	

	Students may alone or in a team cover topics by e-learning material.					
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Midterm exams	2	Oral exam	1	(Other)	
	Written exam	1	Project		(Other)	

Grading and evaluating student work in class and at the final exam

In order to be allowed to sit for examination, students are obligated to attend at least 80% of lectures and 100% of laboratory exercises. Three midterm exams are written in the semester.
The first midterm exam covers topics from 1-4th week, and it is written in the 6th week.
The second midterm exam covers topics from 5-9th week, and it is written in the 9th week. The third midterm exam covers topics from the rest of the semester, and it is written in the last week.
Examples of the questions are available at the Faculty web page.
In order to pass the midterm exam, a student must obtain 40% of points.
Students who do not attend the midterm exam for objective reasons or do not obtain 40% of points, will have opportunity to retake the midterm exam.
The final grade is obtained by attendance and midterm (or final) exams.

Continuous evaluation of students'performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80 (100%)	10
Test I	40	30
Test II	40	30
Test III	40	30
In total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Problem solving – in writing	40	45
Theory – in writing or oral	40	45
Previous activities (including all measures of assessment)	100	10
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-39	Does not meet minimal criteria	Fail (1)

	40-64	Meets minimum criteria	Sufficient (2)
	65-79	Average success with noticeable mistakes	Good (3)
	80-89	Above average success with few mistakes	Very good (4)
	90-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Lessons in Electric Circuits, allaboutcircuits.com/textbook vol.2,3: AC, semiconductors		at web
	K.P. Mohandas, Basis of Electrical Enginering, ECReference Books		YES
	Bharti Dwivedi, Fundamentals of Electrical Engineering, Wiley India, 2019. ISBN: 9788126542710		YES
	G. Rizzoni, Fundamentals of Electrical Engineering, McGraw-Hill, 2009.		YES
Optional literature (at the time of submission of study programme proposal)	1. J. Payne: The Marine Electrical & Electronics Bible – A Practical –handbook for Cruising Sailors, Adlard Coles Nautical, London, 2007. 2. I. Vujović, I. Kuzmanić, Z. Kulenović, Dielectric Materials' Selection for Marine Applications, LAP LAMBERT Academic Publishing, Saarbrücken, Germany, ISBN 987-3-659-59822-7, 2014. 3. R. C. Dorf, The Electrical Engineering Handbook, Chapman & Hall/CRCnetBASE, New York, 2009. 4. G. Rizzoni, J. Kearns, Principles And Applications of Electrical Engineering, 5th edition, Mcgraw Hil, 2015. 5. H. D. McGeorge: Marine Electrical Equipment and Practice, Butterworth-Heinemann, 1993., 2nd edition, 2014. 6. J. Bird: Electrical circuit theory and technology, Elsevier 2002, 2nd revised edition, London, Oxford, New York, Paris, 2003. 7. A. S. Morris: Measurement & instrumentation principles, Butterworth-Heinemann, 3rd edition 2001 8. E. Sherman: Powerboater's Guide to electrical systems: maintenance, troubleshooting, and improvements, International Marine 2000, 2nd ed. 2007. 9. E. Sherman: Advanced marine electrics and electronics troubleshooting: a manual for boat owners and marine technician, International Marine, 2007.		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty		
Other (as the proposer wishes to add)			

4.11.4.7 Graphic Drawing in Marine Engineering

NAME OF THE COURSE	**GRAPHIC DRAWING IN MARINE ENGINEERING**		
Code	VPS104	Year of study	2nd
Course teacher	Luka Mihanović Ph.D.	Credits (ECTS)	3

<table>
<tr><td>Associate teachers</td><td>Tomislav Perić</td><td>Teaching methods (number of teaching hours per semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td></td><td></td><td></td><td>15</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Master the principles and standards of technical sketching, drawing and creating documents. Familiarisation with technical drawing and independent creative production.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">No requirements</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">1. Understand the elements of the technical drawing and to interpret it (ISO, DIN and HRN standards).
2. Familiarise with technical drawing.
3. Create a sketch, outline and technical drawing of an engineering element or system by using the calculation in orthogonal projection and its spatial visualisation as part of technical documentation (using technical accessories or AutoCAD).</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">1. Introduction to technical drawing. Rules, regulations and recommendations in accordance to ISO and DIN standards in technical drawing. Types and classification of technical drawing.
2. Standardization. Preferred numbers. Basic preferred series. Drawing formats paper size. Header, frame, parts list. Scale.
3. Types of line and its application. Groups of lines. Technical lettering.
4. Axonometric projection. Orthogonal drawing.
5. Sketching of elements in orthogonal and axonometric projection.
6. Exemptions of projection distribution.
7. Cross-sections. Exemptions of cross-section distribution.
8. Dimensioning. Rules for dimensioning. Dimensioning of lengths, angles, chamfers. Dimensioning of arcs, slopes and cones. Dimensioning of hole. Simplified annotation of weld.
9. Scheme, symbols of electrical, pneumatic, hydraulic and thermal machines and elements.
10. Method of indicating surface texture in drawing – basic definition, symbols and additional indication for indication surface texture.
11. Linear tolerances. ISO system of tolerance. Types of fit. Basic size of fit. Tolerance of free measures.
12. AutoCAD: setup of environment (grid, units, layers, commands, coordinate system). Drawing objects (point, line, ray, circle, arc, ellipse, text, polyline, polygon, hatch, spline, surfaces and solids)
13. AutoCAD: precision (snap, grid, pointer, angles and distances). Modifying (move, copy, stretch, rotate, mirror, scale, trim, extend, fillet, chamfer, lengthen, array, offset, break, erase).
14. AutoCAD: Layers, Annotation (type, setup, style, dimensioning of length, diameter, radius, arc, angle, coordinate, leader note). Hatching.
15. Printing setup.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☑ lectures
☐ seminars and workshops
☑ exercises
☐entirely online
☐ combined with e-learning
☐ field work</td><td colspan="3">☑ individual assignments
☑ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Class attendance is obligatory.</td></tr>
</table>

<table>
<tr><td></td><td>Class attendance is confirmed by student’s signature on, for that purpose prescribed, record sheet.
Students have to be present on classes at least 80% on lectures and 90% on exercises of prescribed hours.
During the semester students are given program tasks which have to be completedindividually at latest by the beginning of the next semester.
Program tasks are considered to be done when they are positively evaluated.
Obligations of students are fulfilled with the minimum percentage of class attendance and tasks completion.
Students are not allowed to take final exam if they have not fulfilled subject obligations. Those students must re-enrol the course in the next academic year.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>Program ming</td><td>1</td></tr>
<tr><td>Midterm exam</td><td>1</td><td>Oral exam</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>
Assessing and evaluating students' performance:
Final evaluation includes class attendance, program tasks, midterm exams or written exam and oral exam. All components have to be evaluated positively, at least with minimum criteria met, in order to pass the final exam. Final exam consists of written and oral exam.
During semester two midterm exams are taken. Students who pass both midterm exams are exempt from final written exam. Students who do not pass one of midterm exams may retake that exam in the final examination period. After, in addition to the written part of the exam or midterm exam, the student meets the minimum requirements in the oral part of the exam, the student has passed the exam. If the student has not solved two midterm exam with a positive grade, the student should take the entire exam.

Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>80 - 100</td><td>28,125</td></tr>
<tr><td>Program tasks</td><td>100</td><td>25</td></tr>
<tr><td>1st Midterm exam</td><td>50</td><td>23,437</td></tr>
<tr><td>2nd Midterm exam</td><td>50</td><td>23,437</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-65</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>66-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-85</td><td>Above average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>95 -100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table>
</td></tr>
</table>

	Title	Number of copies in the library	Available via other media
Required literature (available in the library and via other media)	Simmonds, C.H., Maguire, D.E., Progressive Engineering Drawing for T.E.C. Students, London, Hodder and Stoughton Ltd, 1999 (ISBN 03-40-26196-x-0)		YES
	Sankar Prasad Dey, Mechanical Engineering Drawing, Vikas Publishing House, (ISBN 9325982277, 9789325982277)		YES
Optional literature (at the time of submission of study programme proposal)	Green, P., Zhe Mechanical Engineering Drawing Desk Reference: Creating and Understanding ISO Standard Technical Drawings, Lulu.com, 2007 (ISBN 1847531156, 9781847531155)		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.4.8 On-board Training II

NAME OF THE COURSE	ON-BOARD TRAINING II					
Code	VPN112	Year of the study	2nd			
Course teacher	Tomislav Sunko, M.Eng. Tino Sumić, M.Eng.	Credits (ECTS)	2			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	0	30
Status of the course	Mandatory	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	The main objective of this course for students is to acquire practical knowledge and skills of ship handling in all conditions and gain experience of living and working on board a ship and learning how to be an active member of the crew in ship's daily routine in accordance with STCW and SOLAS conventions.					
Course enrolment requirements and entry competences required for the course	Seamanship III, Elements of Maritime TransportI and II, Work Organization and Management On Board					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	**Naval Nautical students:** 1. Participation in keeping a navigational watch and doing ship paperwork in a proper way. 2. Acquiring practical knowledge and skills of search and rescue procedures, life saving appliances and survival at sea techniques. 3. Acquiring skills of handling small boats, sailboats and yachts, propelled by engine, oars or sails.					

	4. Participation in bridge communication procedures, both in Croatian and English. 5. Learning how to be an active member of the crew in daily practices of maintaining a ship and ship systems, berthing, unberthing, navigation, ship's stay in port, etc. 6. Gaining experience of living and working on board a ship, within the group of people in limited space. **Marine engineering students:** 1. Acquiring practical knowledge and skills ofthe functioning and performance of marine propulsion systems, marine auxiliary power systems, boiler steam systems, separator filter plants, compression systems, hydraulic systems and steering gear control systems. 2.Learning how to able to apply this knowledge on board ships and simulators, according to STCW convention management level requirements.
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises for Naval Nautical students :** 1. Applying International Regulations for Preventing Collisions at Sea 2. Voyage planning, making a passage plan. 3. Determining position in navigation and its plotting onto a nautical chart using navigational instruments and devices, RADAR, ARPA, AIS, ECDIS, GPS/DGPS and other navigational systems. 4. Regular and emergency steering gear 5. Berthing and unberthing a ship, anchoring a ship, handling marine ropes and steel cables. 6. Procedures of organizing the ship's crew at sea and in port according to SOLAS manual. 7. Maintaining bridge communication procedures, both in Croatian and English. 8. Determining search and rescue procedures, handling rescue crafts. 9. Maintenance of ship and marine equipment. **Exercises for Naval Marine engineering students:** 1. Fire-fighting procedures, handling fire fighting systems and equipment, engine room fire fighting procedures using CO2 and handling a fire fighting water pump. 2. Handling personal fire fighting equipment, including a breathing apparatus 3. Familiarisation with the construction of a ship. 4. Following an efficient watchkeeping routine in the ship's engine room. 5. Keeping the engine room log book record in a proper way. 6. Handling a ship separator system, maintaining a sanitary wastewater device, handling devices for separating oil from the bilges and interpreting oil record book. 7. Familiarization with design and principle of structural tanks and ways of measuring their contents. 8. Handling cooling and ventilation systems, steam-compression plant, air – compression plant. 9. Handling fuel and lubricating systems, bunkering procedures.Replenishing at sea (RAS). 10. Familiarization with design and principle work of individual elements of hydraulic systems, tanks, pumps, pipes, control valves, hydraulic motors and pipelines, steering gear system, requirements for emergency steering system, mode of switching from remote control to local controls of steering gear, maintaining the ship overall hydraulic system. 11. Handling different types of cargo winches, winches and anchor windlass.

<table>
<tr><td></td><td colspan="6">12. Air motor-starting systems procedures, motor preparation for starting, propulsion engine reversing and handling coupling and reduction gear systems
13. Familiarization with motor central cooling systems and their characteristics, sea and fresh water systems and lubricating oil system.
14. Maintaining theship main engine system.
15. Familiarization with generators, alternators and electrical energy distribution, handling work of DC and AC generators, parallel work of two or more generators, handling work of a D.C. motor, handling induction motors, AC and DC distribution systems, battery maintenance, design and use of switches and fuses.Controlling and monitoring a ship power plant, handling propulsion engine automatic remote control systems and engine bridge control system, handling surveillance, warning and alarm systems.</td></tr>
<tr><td>Format of instructions</td><td colspan="3">☐ lectures
☐ seminars and workshops
☐ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Student obligations
Mandatory 100% attendance, log keeping. Students who do not achieve 100% attendance, ie. miss boarding the school ship are required to re-enroll in the course next year. The schedule and program of the pratcite are realized during boarding on a school or some other appropriate ship, within a 24-hour stay on the ship for a minimum of 5 days.</td></tr>
<tr><td rowspan="5">Screening student work (enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0,7</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Standalone</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>Demonstration of understandings</td><td>1,3</td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
The exam is not taken. In order to obtain a signature, it is necessary to complete 100% of the planned voyage on the school ship, actively participate in the exercises, fill in the appropriate log and complete other set tasks. Students who have completed maritime high school and have more than 6 months of navigation as deck or enginee trainees (or officers) in the last five years will be recognized as navigational practices. Evidence is obtained by inspecting the seaman's book, and by reviewing the authorization of the officer of the navigational watch or by reviewing the log kept by the cadet.

Continuous evaluation of the students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>100</td><td>50</td></tr>
<tr><td>Demonstration of skills and knowledge</td><td>100</td><td>50</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table></td></tr>
</table>

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	IMO: Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)	1	Yes
	MARISEC: Bridge Procedures Guide, 1998		Yes
	IMO/ILO Reference Manual		Yes
	Hydrographic Institute publications and charts		Yes
	Wallin, B.: ''Ship Navigation 1st Edition'', Dokmar Maritime Publishers B. V., Vlissingen-The Netherlands, 2016.		Yes
	K. Kuiken "Diesel Engines for ship propulsion and power plants Part I & Part II", Zwolle, Netherlands, 2012.		Yes
	McGeorge, H.D.: Marine Auxiliary Machinery, Butteworth-Heinemann, Oxford, 2002.		Yes
Optional literature (at the time of submission of study programme proposal)	Bridge Team Management, Second Edition, Captain A. J. Swift FNI, 2004		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire		
Other (as the proposer wishes to add)			

4.11.4.9 Physical Education

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">PHYSICAL EDUCATION</td></tr>
<tr><td>Code</td><td>VPO115</td><td>Year of study</td><td colspan="3">2nd</td></tr>
<tr><td>Course teacher</td><td>Domagoj Bagarić, M.P.Ed.</td><td>Credits (ECTS)</td><td colspan="3">0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ivica Bajaj, M.P.Ed.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one’s health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">-Use part of the basic kinesiological motor knowledge about a certain kinesiological activity that is important for successful studying.
-Develop the abilities, characteristics and positive attitudes defined within the educational area of physical education which contribute to successful studying.
-Recognize the need and importance of regular exercise in order to preserve one's health and improve the quality of life.
-Perform basic kinesiological programs on one's own.
-Conduct the testing of anthropological characteristics.
-Plan an active rest (an active break during periods of study in one's free time).
-Develop tolerance, work habits and self-discipline.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Exercises:
1. Regular testing of physical abilities
2. The development of functional abilities
3. The development of motor abilities
4. Fitness programs
5. Swimming
6. Naval pentathlon (naval obstacles, navy skills training area)
7. Navy skills training (rowing, sailing)</td></tr>
<tr><td>Format of instruction:</td><td colspan="2">☐Lectures
☐ Seminars
☒ Exercises
☐ On-line in entirety
☐ Field work</td><td colspan="3">☐ Individual assignments
☐ Multimedia
☐ Lab exercises
☐ Mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="5">Students are required to participate in exercises. Records of student attendance are also kept.</td></tr>
</table>

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research		Practical training	
	Experimental work		Report		Independent study and homework (other)	
	Essay		Seminar paper		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** During the academic year, students are required to take two regular physical fitness tests to meet the established norms.		
Required literature (available in the library and via other media	**Title**	**Number of copies in the library**	**Availability via other media**
Optional literature (at the time of submission of study programme proposal)	Tudor O. Bompa, Ph.D..: Periodizacija teorija i metodologija treninga, Zagreb, 2006. M. Mišigoj-Duraković and associates.: Tjelesno vježbanje i zdravlje, Zagreb 1999.		
Quality assurance methods that ensure acquisition of learning outcomes	University survey and teaching supervision.		
Other (as the proposer wishes to add)			

4.11.5 3rd Year, V Semester

4.11.5.1 Mathematics III

NAME OF THE COURSE	**MATHEMATICS III**					
Code	VPO116	Year of study	3rd			
Course teacher	Nikola Koceić-Bilan, Ph.D.	Credits (ECTS)	4			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning	10			
COURSE DESCRIPTION						
Course objectives	Basic knowledge of the mathematics areas that is necessary for studying and student performance in other courses within the curriculum.					
Course enrolment requirements and entry competencies required for the course	Successful completion of Mathematics I and Mathematics II					

<table>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="2">1. Explain and calculate double and triple integrals
2. Apply them in solving problems
3. Express definitions and explain the meaning of the fields scalar and vector fields
4. Use differential operators
5. Explain and calculate curve and surface integrals
6. Solve practical problems with the aid of complex functions, Fourier's order and integrals
7. Describe Laplace's transformations and apply them in solving differential equations.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="2">Lectures:
1. Introduction.
2. Double integrals and applications.
3. Triple integrals and applications.
4. Scalar and vector field.
5. Differential operators.
6. Curve integral of the first order.
7. Curve integral of the second order. Green's theorem.
8. Surface integral of the first order.
9. Surface integral of the second order. Gauss - Ostrogradski formula. Stoke`s formula.
10. Complex functions.
11. Fourier's order.
12. Fourier's transformation.
13. Laplace's transformation.
14. Applications Laplace's transformation in solving differential equations.
15. Reviewing and revision.

Exercises:
1. Revision of defined integrals.
2. Double integrals and application.
3. Triple integrals and application.
4. Scalar and vector field.
5. Differential operators.
6. Curve integral of the first order.
7. Curve integral of the second order. Green's theorem.
8. <i>Midterm exam</i>
9. Surface integral of the first order.
10. Surface integral of the second order. Gauss - Ostrogradski formula. Stoke`s formula.
11. Fourier's order.
12. Fourier's transformation.
13. Laplace's transformation.
14. Application of Laplace's transformation in solving differential equations.
15. Final exam</td></tr>
<tr><td>Format of instruction:</td><td>☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td>☐ individual assignments
☒ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="2">Attending lectures and auditory exercises for at least 80% of provided hours. Active participation in lectures and regular attendance. There are two</td></tr>
</table>

<table>
<tr><td></td><td>midterm exams (midterm and end of term exam). Passing both exams exempts the student from attending the final written exam. After passing the written part of the exam the student must take the oral exam.
In case the student does not attend lectures regularly he /she is obligated to enrol inthe course again next academic year.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Test</td><td>2</td><td>Oral exam</td><td>0,9</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>
Assessment and evaluation of full-time students' work
Each student must take the written and oral exam.
Written part of the exam consists of two midterm exams (midterm test during the 8th and End of term test during the 15th week of the course) and of the final written exam (during the examination term). After passing the written part of the exam the student must take the oral exam. In case the student was extremely active during the lectures and is content with his or her grade of the written exam, he or she may be exempt from taking the oral part of the exam. The student must have at least 50% of points to pass the midterm/end of term exam. The student must pass both exams to be exempt from taking the final written exam. If the student passes only one of the two exams, he or she will be exempt from that part of the curriculum in the final written exam. The grade of the written part of the exam is based on the average value of the midterm/end of term exam points or the final written exam points.
The students' attendance and activity are monitored during the course and are added to the final grade of the course.

Continuous evaluation of students'performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance and activity during the course</td><td>80
The most active students gain 5-10 points, depending of the activity.</td><td>10</td></tr>
<tr><td>1st Midterm exam</td><td>50</td><td>30</td></tr>
<tr><td>2nd Midterm exam</td><td>50</td><td>30</td></tr>
<tr><td>In total</td><td></td><td>70 - in this case the student can attend the oral exam</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
</table>
</td></tr>
</table>

	Written exam	50	60
	Oral exam	50	30
	Previous activities (include all indicators of the continuous assessment)	80	10
	In total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	https://www.pfst.hr/hr/component/intranet/?view=sskolegijmaterijal		yes
	T.C. Gupta, Problems And Solutions In Engineering Mathematics Volume-I, 2012. ISBN 9789381159330		yes
	H.C.Taneja, Advanced Engineering Mathematics, I. K. International, 2007		yes
	H. G. ter Morsche, J. C. van den Berg, E. M. van de Vrie: "Fourier and Laplace Transforms", Cambridge University Press, 2003 https://books.google.hr/books?id=frT5_rfyO4IC&printsec=frontcover&hl=hr#v=onepage&q&f=false		yes
Optional literature (at the time of submission of study programme proposal)	J. Jerri: "Introduction to Integral Equations with Applications", John Wiley & Sons, 1999 Calculus III, http://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of students attendance, Teaching process monitoring by Faculty.		
Other (as the proposer wishes to add)			

4.11.5.2 Military Psychology

NAME OF THE COURSE	**MILITARY PSYCHOLOGY**		
Code	VPO117	Year of study	3rd
Course teacher	Darko Hren, Ph.D.	Credits (ECTS)	3

Associate teachers	Katija Kalebić Jakupčević, Ph.D. Boris Milavić, Ph.D VesnaTrut, M.Sc.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning	20			

COURSE DESCRIPTION

Course objectives	Students will be able to identify, describe and explain basic terms in the area of general and military psychology. They will know how to apply and integrate them in the process of general and commanding military duties. Students will be able to identify, predict and partially modify behaviour and experience of individuals and groups in military surrounding.
Course enrolment requirements and entry competencies required for the course	
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. To integrate the knowledge from the general and military psychology into professional work. 2. To identify, explain and modify behaviour and experiencing of individuals and groups in military surrounding. 3. To recognize and acknowledge inefficient professional functioning and demonstrate efficient models of behaviour. 4. Identify individuals at risk, and organize and plan resolving interpersonal problems in fulfilling military duties. 5. To identify and predict the influence of professional stress at the individual and group (military unit) level. 6. To prepare and create a system of psychological prevention and support in the military unit. 7. To describe, prepare and organize basic tenets of psychological military preparedness. 8. To predict, prepare and organize cooperation with psychologist in a military unit.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Introduction to military psychology, 2L 2. Psychology of soldier personality, 2L 3. psychological selection and classification in the military, 2L 4. Psychological specifics of commanding behaviour, 2L 5. Motivational activities in the military, 2L 6. Adjusted and unadjusted behaviour in the military, 2L 7. Psychological preparedness for combat, 2L 8. Attention in the military, 2L 9. Tiredness and military efficiency, 2L 10. Emotions and military efficiency, 2L 11. Stress management, 2L 12. Psychological specifics of international military operations, 2L 13. Psychological specifics of international military operations, 2L 14. Psychological crisis interventions, 2L 15. Psychological preparedness of soldiers, 2L

Exercises

1. Introduction to military psychology,
2. Psychology of soldier personality,
3. psychological selection and classification in the military
4. Psychological specifics of commanding behaviour,
5. Motivational activities in the military,
6. Adjusted and unadjusted behaviour in the military,
7. Psychological preparedness for combat,
8. Attention in the military,
9. Tiredness and military efficiency,
10. Emotions and military efficiency,
11. Stress management,
12. Psychological specifics of international military operations,
13. Psychological specifics of international military operations,
14. Psychological crisis interventions,
15. Psychological preparedness of soldiers

Format of instruction:

☑ lectures	☑ individual assignments
☐seminars and workshops	☐ multimedia
☐ tutorials	☑ practical work
☐ completely *on line*	☐ lab exercises
☐ mixed e-learning	☐ mentoring
☐ field teaching	☐ (other)

Student responsibilities

Attending lectures and practical training is compulsory and the attendance list is kept. Students must attend at least 90% of all classes (lectures and practical training) or they are denied the lecturer's signature and cannot pass the course. Students who have missed classes and thus are denied the lecturer's signature because of health issues or other acceptable reasons will be given an opportunity to make up for missing classes through additional independent work after consultation with course coordinator.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course*

Class attendance	1,5	Research		Practical training	0,5
Experimental work		Term paper		Independent study and homework (other)	1
Essay		Seminar paper	0	(other)	
Midterm/ End of term exams		Oral exam		(other)	
Written exam	0	Project		(other)	

Grading and evaluating student work in class and at the final exam

Students can pass the course by passing two midterm exams (at least 50% success on each). In case they do not pass one or both midterm exams they need to take the final exam.

Continuous evaluation of students'performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance and activity in class	90	20
I Midterm exam	50	40
II Midterm exam	50	40

	In total | | 100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance	90	20
Exam (written and oral)	50	80
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail(1)
50-64	Meets minimum criteria	Sufficient(2)
65-79	Average success with noticeable mistakes	Good(3)
80-89	Above average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Available via other media
Required literature (available in the library and via other media)	Task Group HFM-081 (2008). *Stress and Psychological Support in Modern Military Operations - Technical Report*. NATO: Research and Technology Organization. (ovo imamo i u tiskanom obliku).	10	YES
	Sinclair, R. R., & Britt, T. W. (ed.). (2013). *Building Psychological Resilience in Military Personnel*. Washington, DC: American Psychological Association.	10	YES
	Wagner, A. W, & Jakupcak, M. (ed.) (2012). *The Oxford Handbook of Military Psychology*. New York: Oxford University Press.	10	YES
	Kennedy, C. H., &Zillmer, E. A. (ed.). (2006). *Military psychology: Clinical and Operational Apllication.* New York: The Guilford Press.	10	YES
Optional literature (at the time of submission of study programme proposal)	Stress and Psychological Support in Modern Military Operations (2008.). Final Report of Task Group HFM 081. RTO NATO. (pdf /CD)		
Quality assurance methods that ensure acquisition of learning outcomes	Student evaluation, attendance list, University class monitoring		
Other (as the proposer wishes to add)			

4.11.5.3 Military Pedagogy

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">MILITARY PEDAGOGY</td></tr>
<tr><td>Code</td><td>VPO118</td><td>Year of study</td><td colspan="3">3rd</td></tr>
<tr><td>Course teacher</td><td>Ivana Batarelo Kokić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">3</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Andrija Kozina, Ph. D.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>5</td><td>10</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3">0 %</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The course goal is to develop students’ critical understanding and evaluation of the following: the term and subject of (military) pedagogy, methodology and area of research; military education curriculum theory; adult education theories; area and content of educational standards in military pedagogy; didactic and methods of lifelong teaching and learning in military education.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">Students will be able to:
1. Explain characteristics of the pedagogical science and its relation towards other disciplines
2. Critically think about military education curriculum
3. Define and formulate goals and outcomes of learning
4. Define and explain basic andragogic terms
5. Define particularities of the educational work in military education
6. Explain didactic models, educational systems, teaching methods and approaches
7. Explain the lifelong learning phenomena in military education
8. Conduct practical pedagogical, didactic and methodological work</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. Theoretical and methodological basis of pedagogy, its subject and area of research
2. Theoretical and methodological basis of pedagogy, its subject and area of research
3. Military education curriculum, structural characteristics, competencies and outcomes
4. Taxonomy of learning objectives
5. Relation between learning outcomes and competencies
6. Theory and practice of adult education
7. Theory and practice of adult education
8. Educational standards of military pedagogy
9. Didactic models and strategies, educational systems, teaching methods, forms and teaching principles
10. Didactic models and strategies, educational systems, teaching methods, forms and teaching principles
11. Planning, organizing, realization and evaluation of military education
12. Planning, organizing, realization and evaluation of military education
13. Specific methodological approaches in work with military learners
14. Lifelong learning in military education
15. Future of military pedagogy

Exercises:
1. Student teaching and critical-methodical participation in classes.
2. Learning styles (visual, reading, auditory, kinaesthetic).</td></tr>
</table>

	3. Analysis of practical military training. 4. Evaluation of the teaching activity implementation. 5. Educational management (autocratic, democratic, emotional, laissez-faire) 6. Problem solving approaches. 7. Definition of the military education standards. 8. Modern educational systems.

Format of instruction	☑lectures ☑seminars and workshops ☑exercises ☐*on line in entirety* ☐partial e-learning ☐field work	☑independent assignments ☐multimedia ☐laboratory ☐work with mentor ☐ (other)
Student responsibilities	Students are expected to regularly attend lectures and other course activities (2.0 ECTS points). Students are allowed to miss 30% of the lectures/exercise (the absence is not an excuse for non-completion of the current tasks). Students that miss more than 30% of the lectures/exercises and do not complete the course exercises will not be allowed to take the final exam. Students are expected to contribute to the creation of positive and pleasant work environment. Also, students are obliged to respect the norms of the University Code of Ethics and Code of Ethics for students.	

Screening student work*(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1.125	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0.43	(Other)	
	Midterm/ End of term exams		Oral exam	0.43	(Other)	
	Written exam	1	Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Exercise evaluation through portfolio; written exam; oral exam

Final examination:

Evaluation elements	Achievement (min.%)	Portion of the final grade (%)
Course attendance	95	20
Completed exercises	80	20
Exam (written)	60	40
Exam (oral)	60	20
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet the minimum criteria	Fail (1)
50-64	Meets the minimum criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above-average achievement with few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Jarvis, P. (Ed.). (2006). *The theory and practice of teaching*. Routledge.		YES
	Kvernbekk, T. Simpson, H. Peters M. A. (ur.) (2008.) *Military Pedagogies and Why They Matter.* Sense publisher, Rotterdam.		YES
	Uljens, M., Ylimaki, R. M. (2017), Bridging Educational Leadership, Curriculum Theory and Didaktik.		YES
	Gagne, R. M., Wager, W. W., Golas, K. C., Keller, J. M., & Russell, J. D. (2005). Principles of instructional design. *Performance Improvement*, *44*(2), 44-46.		YES
Optional literature (at the time of submission of study programme proposal)	Jarvis, P. (2004). *Adult education and lifelong learning: Theory and practice*. Routledge. Gagne, R. M. (1962). Military training and principles of learning. *American psychologist*, *17*(2), 83. Gudjons, H. (1994), "Pedagogy, basic knowledge" Pinar, W.F. (2004), "Understanding Curriculum", New York, NY: Peter Lang Publishing, Inc. Ellis A. (2003), "Exemplars of Curriculum Theory"		
Quality assurance methods that ensure the acquisition of exit competences	The quality of the performance themes/lectures will be monitored continuously and systematically recorded during teaching. The suggestions and reactions of participants will be monitored during the semester. At the end of the course, participants will complete an anonymous questionnaire (evaluation questionnaire). Comments, suggestions and information from the survey and valorisation methods (the exercise results, written and oral exams) will be used in order to improve teaching, lectures and other forms of work.		
Other (as the proposer wishes to add)			

4.11.5.4 Military Training II

NAME OF THE COURSE	MILITARY TRAINING II					
Code	VPO142	Year of study	3rd			
Course teacher	Luka Mihanović, Ph.D.	Credits (ECTS)	2			
Associate teachers	Hrvoje Šimleša	Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	0	30
Status of the course	Mandatory for all students	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	To develop skills and train cadets in leading the squad/platoon during various tactical mission tasks in winter conditions. To teach cadets about leadership and command duties in different tactical missions and situations as a squad/platoon leader. To develop military virtues needed for naval officers, such as endurance, courage, resourcefulness and competence.					
Course enrolment requirements and entry competences	Prerequisite for this course is passing grade in Professional Military Practice I, and cadets should also enrol the 3rd year of study.					

<table>
<tr><td>required for the course</td><td>Also, cadets need to fulfil required standards for the PRT (Physical Readiness Test) and to finish prior theoretical part of the training.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td>1. Apply specific skills in communication, organization and of planning of activities for the squad/platoon leadership.
2. Making decision independently and lead the squad/platoon.
3. Develop, guide and implement creativity in daily squad/platoon tasks.
4. Know concepts, elements, factors and methods of preparations and executing tactical movement and employing fires.
5. Know concepts and methods of supporting the team before, during and after combat functions.
6. Know concepts, functions and procedures of engineering support and explosive ordnance disposal for force protection.
7. Know basic parts of personal weapons, using „4 golden rules“, and handling of personal weapons.
8. Define, explain and link basic terms of leadership “BE”, “KNOW”, “DO”, and command duties of squad/company leader during peacetime as well as in combat.
9. Define, explain, and ling basic terms, organization, structure, scope of work and duties of command elements of platoon/company.
10. Identify, explain and link basic terms, elements and procedures during forming military topography, and procedures for leading units.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td>Field work:
1. Team/squad/platoon/company tactics, techniques and procedures.
2. Infantry weapons handling techniques and firing practice.
3. Team/squad/platoon/company Command and Control.
4. Leading the units.</td></tr>
<tr><td>Format of instructions</td><td>1. ☐ lectures
2. ☐ seminars and workshops
3. ☒ exercises
4. ☐on line in entirety
5. ☐ partial e-learning
☒ field work

6. ☒ independent assignments
7. ☐ multimedia
8. ☐ laboratory
9. ☐ work with mentor
10. ☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td>Attendance: 100 %</td></tr>
<tr><td>Screening student work (enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>0,7</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Skills demonstration</td><td>1,7</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>There will only be a practical test of knowledge and skills:

Cadet will assume the role of team/squad leader; cadet will demonstrate knowledge on personal and infantry weapons handling, first aid emergency treatment and tactical combat casualty care, the use of protective gas masks, map orienteering as well as in real environment, use of communication devices.

Continuous evaluation of students' performance
<table>
<tr><th>Elements</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>100</td><td>40</td></tr>
</table>
</td></tr>
</table>

	Demonstration of knowledge and skills during classes, keeping logs	100	60
	Total		100

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	FM 3-90 – Tactics		YES
	FM 3-21.8 – The Infantry Rifle Platoon and Squad		YES
	STANAG 2014		YES
	Mladen Pahernik, Stanislav Frangeš, Robert Župan, Military Topography I – Topographic Land Objects and Military Topography II – Orientation and Topographic Maps		YES
	APP-6 – Military Symbols for Land Based Systems (1986) APP-6(A) – Military Symbols for Land Based Systems (1998) APP-6(B) – Joint Symbology (2008) APP-6(C) – NATO Joint Military Symbology (2011)		YES
	MIL-STD-2525 manuals from Defense Information Systems Agency (DISA)		YES
	FM 101-5-1/MCRP 5-2A OPERATIONAL TERMS AND GRAPHICS (1997)		YES
	Reeves, Ira L., The A B C of Rifle, „Revolver and Pistol Shooting“. Kansas City, MO, USA		YES
	„NRA Gun Safety Rules“. The National Rifle Association of America. 2018.		YES
	Butler, F. K.; Hagmann, J.; Butler, E. G. (1996-08-01). “Tactical combat casualty care in special operations”. Military Medicine. 161 Suppl: 3–16.		YES
	Terzuolo, E. ; “NATO and Weapons of Mass Destruction: Regional Alliance, Global Threats”, 2006.		YES
	FM 24-18: Tactical Single Channel Radio Communications Techniques		YES
Optional literature (at the time of submission of study programme proposal)	FM 3-06 – Urban Operations		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students’ attendance, evidence of professors’ attendance, students’ questionnaire, Faculty class inspection.		

Other (as the proposer wishes to add)	

4.11.5.5 Physical Education

NAME OF THE COURSE	PHYSICAL EDUCATION					
Code	VPO120	Year of study	3rd			
Course teacher	Domagoj Bagarić, M.P.Ed.	Credits (ECTS)	0			
Associate teachers	Ivica Bajaj, M.P.Ed.	Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning				

COURSE DESCRIPTION	
Course objectives	The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	- Use specific exercises for a certain kinesiological activity. - Combine the basic elements of a certain kinesiological activity. - Learn the rules to perform a certain kinesiological activity. - Demonstrate the proper performance of new elements and skills of a certain kinesiological activity. - Organize physical training in order to spend one's free time actively. - Take care of one's health by exercising regularely. - Explain some osteomuscular disorders and exercises for their prevention.
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises:** 1. Regular testing of physical abilities 2. The development of functional abilities 3. The development of motor abilities 4. Fitness programs 5. Swimming 6. Naval pentathlon (naval obstacles, navy skills training area) 7. Navy skills training (rowing, sailing)
Format of instruction:	☐Lectures ☐ Seminars ☒ Exercises ☐ On-line in entirety ☐ Field work ☐ Individual assignments ☐ Multimedia ☐ Lab exercises ☐ Mentoring

Student responsibilities	Students are required to participate in exercises. Records of student attendance are also kept.					
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research		Practical training	
	Experimental work		Report		Self-study and homework assignements (Other)	
	Essay		Seminar paper		(Other)	
	Oral exam		Project		(Other)	
	Written exam				(Other)	
Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** During the academic year, students are required to take two regular physical fitness tests to meet the established norms.					
Required literature (available in the library and via other media)	**Title**			**Number of copies in the library**	**Availability via other media**	
Optional literature (at the time of submission of study programme proposal)	Kineziološki priručnik za pripadnike OSRH, Zagreb 2005. Maršić, T. Dizdar, D. Šentija, D.: Osnove treninga izdržljivosti i brzine, Zagreb, 2008.					
Quality assurance methods that ensure acquisition of learning outcomes	University survey and teaching supervision.					
Other (as the proposer wishes to add)						

4.11.5.6 Maritime Meteorology and Oceanology

NAME OF THE COURSE	**MARITIME METEOROLOGY AND OCEANOLOGY**					
Code	VPN113	Year of study	3rd			
Course teacher	Nenad Leder, Ph.D.	Credits (ECTS)	4			
Associate teachers	Ivica Šantić	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	15	0
Status of the course	Mandatory for Naval Nautical Studies	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						

Course objectives	Ability to understand and interpret synoptic charts and to forecast local weather taking into account local weather conditions and data obtained by weather chart receiver. Understanding characteristics of diverse weather systems and patterns, including tropical storms and avoiding the centres of storms and dangerous quadrants. Knowledge of ocean current system. Ability to calculate tides. Use of appropriate navigational publications.	
Course enrolment requirements and entry competencies required for the course	/	
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Analyze meteorological and oceanological elements and phenomena significant for safe and economical navigation. 2. Observe, cipher and decipher marine meteorological and oceanological elements and phenomena. 3. Use navigational publications in planning, during and after navigation. 4. Distinguish and interpret weather and oceanological conditions, understand predicted situations, including local conditions. 5. Use weather forecast in passage planning, follow real conditions in the course of voyage, and be able to analyze their influence on safety, timely arrival and economics of voyage.	
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. History of meteorology. 2. Position of the Earth in the universe. 3. Atmosphere. 4. Meteorological elements and phenomena. 5. Forecast of weather and oceanological conditions. 6. Synoptic charts and weather forecasting. 7. Global wind and pressure systems. 8. Relatedness of weather to the main types of air masses. 9. Synoptic and prognostic charts and forecasts from any source. 10. Code for ship weather report 11. Receivers of meteorological and oceanological information. 12. Characteristics of weather systems. 13. Forming, structure and weather in relation to main frontal systems. 14. Forming and weather characteristics of non-frontal cyclones. 15. Tropical revolving storms. **Practical work:** 1. Actual ocean systems. 2. Surface circulation of the sea water in the oceans and adjacent seas. 3. Forming of wind waves in the sea and swell. 4. Main types of floating ice, their sources and movement. 5. Main principles of safe ice navigation. 6. The most important conditions of accumulation of ice on superstructure, risks and possibilities of prevention. 7. Meteorological navigation. 8. Principles of planning passage and selection of optimum routes taking into account meteorological and oceanological conditions.	
Format of instruction:	☐lectures	☐ individual assignments

	☐ seminars and workshops ☐exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ multimedia ☐lab exercises ☐ mentoring ☐ (other)
Student responsibilities	Lectures and exercises are mandatory for students and records of attendance are kept. In order to get a signature, students must attend a minimum of 80% of classes (lectures and exercises). In case of insufficient attendance at classes, no signature or the right to take the exam will be given.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1.5	Research		Practical training	0.5
	Experimental work		Report		Report	
	Essay		Seminar paper	0.5	(Other)	
	Tests/Midterm exams	1.5	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students'performance:
Class attendance is mandatory for students, ie the condition for obtaining a signature is attendance at a minimum of 80% of lectures and auditory exercises. 2 mid term test are written in the semester.

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80(95%)	40
Midterm exam 1	50	30
Midterm exam 2	50	30
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Knauss, J.A. and N. Garfield: Introduction to Physical Oceanography, Waveland Press, 3rd edition, 2017.		yes
	Cornish, M. and E. Ives: Reeds Maritime meteorology, Adlard Coles Nautical-London, 3rd edition, 2006.		yes
	Talley, L.D., G.L. Pickard, W.J. Emery, J.H. Swift: Descriptive Physical Oceanography, Elsevier, 6rd edition, 2011.		yes

Optional literature (at the time of submission of study programme proposal)	Pickard, G. L. and W.J. Emery: Descriptive Physical Oceanography, Pergamon Press, Oxford, 1990. Karnetzki, D.: Practical Weather Forecasting, Adlard Coles Nautical-London,1994. Guidelines for ships operating in polar waters, IMO, 2010.
Quality assurance methods that ensure the acquisition of exit competences	University survey, List of student attendance, Faculty teaching supervision
Other (as the proposer wishes to add)	

4.11.5.7 Terrestrial Navigation

NAME OF THE COURSE	TERRESTRIAL NAVIGATION					
Code	VPN114	Year of study	3rd			
Course teacher	Zvonimir Lušić, Ph.D.	Credits (ECTS)	6			
Associate teachers	Tomislav Sunko,M.Eng	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	45	0
Status of the course	Mandatory for Naval Nautical Studies	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Master different methods of determining position of a ship at sea, in all conditions. Recognize the symbols and abbreviations on nautical charts (Croatian and English), and assess risk on the basis of charts and nautical publications. Be able to construct Mercator charts, and charts in perspective projection (gnomonic and stereographic). Determine the elements of tides, detect and correct errors of the compass, and elements of loxodromic (rhumb line) and ortodromic (great circle) navigation.					
Course enrolment requirements and entry competencies required for the course	Seamanship III Mathematics I					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	-Explain and interpret basic concepts of maritime navigation. -Describe and analyse the foundations of orientation at sea, dead reckoning navigation, sailing triangles. -Independently plot course and safely conduct the ship in all conditions using knowledge of different methods of positioning and maritime kinematics. -Plan courses and routes using knowledge of the essential features of charts, marks and abbreviations on nautical charts (paper and electronic; Croatian and English) and information from nautical publications. -Analyse errors in positioning and critically assess usability of electronic positioning systems, particularly radar systems (ARPA) and the ECDIS system. -Confirm basic chart projection used in maritime navigation, as well as numerical and graphical methods of construction of Mercator chart (mercator plotting sheet), gnomonic and stereographic projections.					

	-Calculate elements of tides using Croatian and English tables and compare different ways of solving problems, including determination of tide currents. -By applying spherical and planar trigonometry show problem solving in loxodromic (rhumb line), orthodromic (great circle) and combined navigation. -Describe and explain the elements of earth and ship magnetism, and confirm the total approximate formula of deviation. -Interpret methods of determining the magnetic compass deviation, compensation methods and methods of demagnetization.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Fundamental concepts in maritime navigation, basic units and their conversion. 2. Orientation at sea, horizons, navigation instruments, sailing triangles: plane sailing triangle, mid latitude triangle, Mercator triangle. 3. Ship's compasses, Ship and Earth magnetism, theory of magnetic deviation, total approximate formula of deviation. 4. Methods for creating tables and curve of deviation, compensation and demagnetization methods. 5. Cartographic projections; cylindrical, perspective and conical. Construction of Mercator chart (construction of Mercator grid for specific Latitude), gnomonic and stereographic charts. UTM projection. 6. Nautical charts and publications. Notices to Mariners. Log books. Electronic navigation charts, ECDIS. 7. Symbols and abbreviations used on charts, IALA system. 8. Methods for determining positioning at sea, dead reckoning, fix, running fix. Navigation with currents. 9. Errors in positioning in navigation, recommendations for course plotting and auxiliary methods for safe navigation. 10. Passage planning. Route selection, plotting of courses and auxiliary methods for safe navigation. 11. The theory of tides. Use of tide tables. Calculation of tides (heights and times). 12. Determining tidal currents. Rhumb line and Great circle. Rhumb line navigation, calculation of courses and distances. 13. Great circle and combine navigation, calculation of initial/final course, distance, vertex, waypoints. Use of spherical trigonometry. Use of gnomonic chart. 14. Electronic navigation systems and devices, ARPA. Elements of tactical navigation. 15. ECDIS, navigation without paper charts. **Exercises** 1. Geographic coordinates. Basic units and their conversion. Course, bearing, relative bearing. Distance between Meridians of Longitude along a Parallel of Latitude. Determination of speed, time of travel, distance. 2. Sailing triangles-plane sailing triangle, mid latitude triangle. Determination of course and distance between two positions. Dead reckoning navigation. 3. Horizons. Magnetic variation and deviation. Calculation of deviation for magnetic and gyro compass. 4. Magnetic compass adjustment, compass compensation. 5. Cartographic projections, construction of Mercator plotting sheet (grid of meridians and parallels) graphically and computationally. 6. Work on navigation paper chart-plotting courses, bearings, distances, positions. 7. Work on navigation paper chart-symbols and abbreviations. Plotting a line of position. Dead reckoning position.

<table>
<tr><td></td><td colspan="2">8. Work on navigation paper chart-fix, running fix.
9. Work on navigation paper chart-current sailing triangles. Calculation of set and drift, leeway.
10. Work on navigation paper chart-route selection, plotting of courses, auxiliary methods for safe navigation. Voyage plan.
11. Use of navigation publications, auxiliary and informative charts. Use of Notices to mariners, update of navigation charts and publications.
12. Use of tide tables. Calculation of tides.
13. Calculation of safe passage over the shallows. Determination of tidal currents. Rhumb line navigation for large distances.
14. Great Circle navigation- calculation of initial/final course, distance, vertex, waypoints. ETA.
15. Great Circle/Combine navigation (for limited latitude). Use of ECDIS and professional marine software.</td></tr>
<tr><td>Format of instruction:</td><td>☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td>☒ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="2"><table>
<tr><th>Type of activity</th><th>Criterion</th><th>Specific activity</th></tr>
<tr><td>Lecture attendance</td><td>Min 80%</td><td>Presence of students</td></tr>
<tr><td>Exercise attendance</td><td>Min 80%</td><td>Presence of students</td></tr>
<tr><td>Special Course training:
Week 9,14 and 15.</td><td>Min 95%</td><td>Presence of students</td></tr>
<tr><td>Log of exercise</td><td>100%</td><td>Review of log</td></tr>
<tr><td>Self-study and homework assignments</td><td>100%</td><td>Review of log</td></tr>
</table>
Lectures and exercises are obligatory; there is a record of attendance. To obtain a signature min 80% of attendance at lectures and exercises is required, for specific course training minimum is 100 (95) %. In case a student fails to acquire minimal hours of attendance, student will not get a signature and accordingly has no right to apply for the exam.
No absentee notes can justify or replace attendance.

In case of sickness or any other justified reason, students who have more than 80% of attendance, but do not have 100(95)% attendance of special course training, can get extra hours in other, additional terms during semester or later, but not later than one month after regular teaching part of semester.
All other students, i.e. students with less than 80% of attendance have no right to signature and must enrol in the course again next year.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</td><td colspan="2"><table>
<tr><td>Class attendance</td><td>2,2</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Self-study and homework assignments</td><td>0,1</td></tr>
</table></td></tr>
</table>

	Essay		Seminar paper		(Other)	
	Tests/Midterm exams	2,2	Oral exam	1,5	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Midterm exams-time schedule:

I. – exercise (different small tasks, use of nav. Triangles), 5th week

II. – exercise (work on nav. chart), 10th week

III. exercise (great circle/rhumb line, tides, chart projections), 15th week

IV. theory (theory and basic terms/chart), 14/15th week

After successfully passing midterm exams, i.e. having fulfilled all required obligations, students can take the exam from theory. Students with all passed midterm exams are exempt from final exam from theory. The requirement for other students to take final examination is signature. Final examination has two parts: work on chart and all other.

Midterm exams (parts of final exam) are available only during class attendance period, and final exam only during examination period at the end of semester.

Requirement for the 3rd midterm exam is passing the 1st and 2nd midterm exam. If a student failed to pass all exams regarding exercise (I, II, III), but passed some of them, may be credited on this way: work on chart (II.) as independent part, all others as second part (I. and III.). It means that student will need to pass only one of these two main parts, during final examinations.

The 3rd midterm exam can be replaced by some independent work (project), but only during class attendance period.

Final written exam (or one of his two main parts) is valid until end of semester.

Midterm exams or other parts of final exam are not valid in next academic year.

Maximum time allowed for final written exam is 3 school hours

Maximum time allowed for one of two main parts of the final written exam is 2 school hours

Maximum time allowed for midterm exams-from 1 to 2 school hours

Maximum time allowed for midterm exams, theory- up to 1 school hours

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance	95	15
Midterm exam I	75	10
Midterm exam II	75	30
Midterm exam III	75	20
Midterm exam IV-theory (included basic definition and nav, charts)	50 (95%)	20
Homework assignments/projects	100%	5

Final examination:

Elements of assessment	Achievement (min.%)	Portion of the final grade (%)
Previous activity (including all elements of a continuous assessment)	100	10
Work on nav. chart	75	30
Other tasks-written	75	30
Basic definitions and chart work * (written and/or oral)	95	5
Theory (written and/or oral)	50	25

Grading scale:

Minimum to pass is 50%

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Minimum to pass is 75%

Points (%)	Criterion	Grade
-74	Does not meet minimum criteria	Fail (1)
75-84	Meets minimum criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
The Principles of Navigation-The Admiralty Manual of Navigation Vol. 1, The Nautical Institute, UK, 2018.	1	Yes
Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002.	1	Yes
Nautičke tablice (Nautical Tables), HHI, Split.	10	Yes
Navigation (paper) charts, HHI: 200-20; 100-21	1	Yes
Tide tables, UKHO&HHI	1	Yes
Symbols and Abbreviations used on Admiralty/CRO charts, UKHO and HHI	1	Yes

Optional literature (at the time of submission of study programme proposal)	Richard R. Hobbs.: Marine Navigation-Piloting and Celestial and Electronic Navigation-4th Edition, Naval Institute Press, Annapolis-Maryland, 1998. Borje Wallin: Ship Navigation-1st Edition, Dokmar Maritime Publishers B. V., Vlissingen-The Netherlands, 2016. IALA Maritime Buoyage System, UKHO How to correct your charts, Admiralty NP294. Admiralty-The Mariner's Handbook, NP100, UKHO.
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching supervision
Other (as the proposer wishes to add)	

4.11.5.8 Cargo Handling I

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">CARGOHANDLINGI</td></tr>
<tr><td>Code</td><td>VPN115</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Goran Belamarić,Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Zaloa Sanchez Varela</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Nautical Studies</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The aim of the course is to introduce students to international rules, regulations, and standards recommendations relating to a fehandling, stowage, lashingand transport of cargo, characteristics cargo in maritime transport.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">Sucesfful competition of Seanamship I and II, and Means of Maritime Transposrt</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. Explain and interpret the concept of cargo capacity of a ship taking intoconsideration different types of ships and different cargos
2. Define the concept of deadweight and influential factors.
3. Use ship tables and diagrams.
4. Analyse and interpret the impact the types of cargo ship constructions train and stability of the ship.
5. Define and explain the features of loading equipment and means of dunnaging and lashing.
6. Explain the preparation of ship’s holds for receiving certain types of cargo.
7. Determine the amount of loaded/unloaded cargo according to draft and name factors affecting the accuracy of the calculation.
8. Make cargo plan, calculate estability,mean draft and calculation of cargo weight using draft (Draft Survey).
9. Analyse the principle sand procedures for transport of dangerous goods by sea.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lecturers:
Introduction to the course and international regulations, Displacement, Deadweight and use of ships tables and diagrams, Ship Capacity and use of ships tables and diagrams
Loading the ship in salt, brackish and fresh waters, Changing the draft and displacement, Intact stability
Inclining test, Stability Weather Criterion, drawing Stability Curves
Damage stability - Deterministic approaches, Probabilistic approach
Ship stress/strain on structure in exploitation
Analysis of the characteristics of the equipment for loading and discharging cargo.
Analysis of the characteristics of the equipment for loading and discharging cargo.
Impact of the type of cargo and cargo operations with the transverse and longitudinal stability of the ship.
Characteristics of equipment for the lining, fastening and securing of cargo and lashing system calculation.
Damage to cargo in maritime transport (IMDG 2 class hours)</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">Preparation of the ship's holds for cargo loading (IMDG 2 class hours)
Determination of loaded / discharged cargo quantities, checking procedures.
Transportation of hazardous and harmful cargo (IMDG/IMBSC 1+1 class hours)
Transportation of hazardous and harmful cargo (IMDG/IMBSC 1+1 class hours)
Determination of loaded / discharged cargo quantities (Draft Survey)

Exercises:
1. Displacement, Deadweight and use of ship’s tables and diagrams
Ship Capacity and use of ships tables and diagrams
2. Loading the ship in salt, brackish and fresh waters, Intact stability
3. Inclining test, Stability Weather Criterion, drawing Stability Curves
4. Damage stability - Deterministic approaches, Probabilistic approach
5. Ship stress/strain on structure in exploitation
6. Ship cargo loading equipment stress calculation.
7. Calculating examples loading equipment stress, Stowage and securing cargo.
8. Stowing, lining and cargo securing/lashing
9. Planning the loading different cargoes + dangerous cargo (IMDG/IMBSC 1+1 class hour)
10. Planning the loading different cargoes + dangerous cargo (IMDG/IMBSC 1+1 class hour)
11. Planning the loading different cargoes + dangerous cargo (IMDG/IMBSC 1+1 class hour)
12. Planning the loading different cargoes + dangerous cargo (IMDG/IMBSC 1+1 class hour)
13. Planning the loading different cargoes + dangerous cargo (IMDG/IMBSC 1+1 class hour)
14. Determination of loaded / discharged cargo quantities (Draft Survey)
15. Determination of loaded / discharged cargo quantities (Draft Survey)</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒lectures
☐ seminars and workshops
☒exercises
☐on line in entirety
☒partial e-learning
☐ field work</td><td colspan="3">☒individual assignments
☒multimedia
☐ lab exercises
☐ mentoring
☒simulator practice (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures and exercises are compulsory and records of class attendance shall be kept. To get the signature students must attend a compulsory minimum of 80% of instructions (lectures and exercises) and 100% (95%) on the set, which includes training.
In case of insufficient number of class attendance students will not be given a signature or the right to take an exam.
Excuse cannot justify or replace attendance.
Students who, due to illness or other good reasons do not meet conditions for signature and have more than 80% of attendance, will be able to achieve up to 100% (95%) in additional terms, during the semester and after, but not later than one month afterthe end of the classes.
All other students, i.e., those who have achieved less than 80% of class attendance are not eligible for signature and shall re-enrol in the course next year.</td></tr>
<tr><td></td><td>Class attendance</td><td>1.5</td><td>Research</td><td></td><td>Practical training</td><td>1</td></tr>
</table>

<table>
<tr><td rowspan="4">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</td><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Homework)</td><td>0.5</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests/Midterm exams (L2+E2)</td><td>1.0</td><td>Oral exam</td><td>1.0</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
After passing the written exam of practical training, students can take the oral exam. Students who have passed the midterm exams during lectures are exempt from taking the oral exam.
Students who have not passed the midterm exams have to take the final exam that consists of two parts.
The first part refers to the specified resolution of the problem of stability and load, the ship's construction, equipment for cargo handling and securing of cargo, determining the amount of load draft of the ship. The second part refers to the theoretical part and work on the simulator for cargo handling. In order to apply for the final exam, students need to obtain the course teacher’s signature.
Midterm exams shall be held exclusively during classes, and the final exam within the official examination period.
If a student does not pass all midterm exams relating to practical training (but only some) and obtains the course teacher’s signature, may be credited with work on the simulator applications (as a whole), and given the other two tests with exercises. In this case, the final written exam comprises only the unit that a student has not passed, as well as the assessment of the operation on simulator applications (first or second unit).
Midterm exams I and II relating to practical training can be substituted by appropriate individual assignments only during the semester. It does not apply to work on the simulator for cargo handling. Individual units are considered as passed only in the course of the current academic year, i.e. until the end of scheduled examination periods. If students re-enrol in the course next academic year these units shall not be accepted as passed.
This rule may be exempt if a student has passed the written exam of practical training in entirety, than he/she may be given the opportunity to take the oral exam within one year.
Allocated time for practical training written exam is 3 class periods. Allocated time for midterm exam of exercises is 2 class periods. Allocated time for theoretical midterm exam is 2 class periods.

Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance of lectures and participation in the training</td><td>80</td><td>10</td></tr>
<tr><td>I midterm exam (MERLIN) L x 1+ E x 1</td><td>75</td><td>30</td></tr>
<tr><td>II midterm exam (MERLIN) L x 1+ E x 1</td><td>75</td><td>30</td></tr>
<tr><td>Continuous assessment in the training on Cargo Handling Simulators</td><td>100</td><td>15</td></tr>
<tr><td>Individual Tasks</td><td>100</td><td>15</td></tr>
<tr><td>In total</td><td></td><td>100</td></tr>
</table></td></tr>
</table>

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
The theoretical exam (written and/or oral)	50	15
Numerical tasks-written	50	30
*Elementary knowledge (written or oral)	100	5
Demonstration work on simulator	80	20
Theoretical exam (written/oral)	60	20
Individual Tasks	100	10
In total		100

*Basic concepts of ship stability and cargo loading - a prerequisite for listening to Cargo Handling. Repetition of knowledge and skills acquired at the Naval High School or in the subject "Knowledge of Ship and Cargo". Questions available under course material for "Cargo Handling I".

Grading scale:

Points (%)	Criterion	Grade
0-60	Does not meet the minimum criteria	Fail (1)
61-71	Meets the minimum criteria	Sufficient (2)
72-82	Average success with noticeable mistakes	Good (3)
83-94	above-average success with some errors	Very good (4)
95-100	Extraordinary success	Excellent (5)

***On-line MERLIN SYSTEM + VIDEOTEL training and testing based on the agreement between PFST - VIDEOTEL on the use of all VIDEOTEL modules for training PFST students.
***Minimum for pass 75%

Points (%)	Criterion	Grade
0-74	Does not meet minimum criteria	Fail (1)
75-84	Meets minimum criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Belamarić G.: Cargo Handling I – Authorized Lectures, TextBook & PPT presentation, Faculty of Maritime Studies, Split, October 2018.		YES
Martin A. Rhodes (BSc. Hons), Ship Stability for Mates/Masters, Glasgow College of Nautical Studies, Witherbys Seamanship International Ltd. 2008.		YES
Capt. D.R.Derrett, Ship Stability for Masters and Mates, Butterworth-Heinemann Ltd., Oxford, Sixth edition 2006.		YES

	Barras, C.B.: Ship Stability Notes & Examples,3rd edition, Butterworth-Heinemann, Oxford, 2006.		YES
	IMBSC CODE 2014		YES
	International Code on Intact Stability, IMO 2009 Edition		YES
	IMDG Code - Authorized Lectures, TextBook & PPT presentation, Faculty of Maritime Studies, Split, October 2018.		YES
	D. J. House: Cargo Work, Butterworth-Heinemann, Oxford, 1998.		YES
Optional literature (at the time of submission of study programme proposal)	1. IMDG Code, 2018 Edition (inc. Amdt 39-18) 2 volumes 2. DRAUGHT SURVEY - A Guide to Good Practice, Second Edition, The North of England P&I Association Ltd., UK, 2012.		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.5.9 Maritime Communications

NAME OF THE COURSE	**MARITIME COMMUNICATIONS**					
Code	VPN116	Year of study	3rd			
Course teacher	Lea Vojković, Ph.D.	Credits (ECTS)	4			
Associate teachers	Dean Sumić, M.Eng. Tomislav Perić, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	45	0
Status of the course	Mandatory for Naval Nautical Studies	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Familiarizing with and mastering relevant knowledge required by STCW and IMO Model Course for service on ships. Special attention is paid to the Global Maritime Distress and Safety System (GMDSS) and handling and use of radio equipment in different situations. Independently perform all tasks in the domain of maritime communications provided by GMDSS system in all categories of sailing. Acquire competence according to STCW and IMO Model Course 1.25 General Radio Operator Certificate GOC. Handle all ship's GMDSS equipment. Use devices in the appropriate manner practically exercising at Polaris Poseidon GMDSS simulator. Describe the physical features of propagation of electromagnetic waves depending on the frequency band (MF, HF and VHF). Define and describe the parts of the GMDSS. Present functioning of GMDSS in a practical way in cases of distress, urgency, safety or for routine communications. Use compulsory and additional literature for ship's radio station, and take radio log and other documents in the correct manner. Be eligible for General Operator Certificate GOC radio permit approved by Ministry of the Sea, Transport and Infrastructure.					
Course enrolment requirements and entry competencies required for the course						

Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Demonstrate all tasks referring to Maritime communications in accordance with GMDSS in all Sea areas. 2. Produce all needed competencies in accordance with STCW i IMO Model Course 1.25 GOC. 3. Demonstrate handling with all equipment related to GMDSS. 4. Use the devices in the prescribed manner by practicing on a Polaris Poseidon GMDSS simulator.Summarize devices in the prescribed manner practically rehearsing at DNV-GL approved simulator. 5. Demonstrate physical descriptions of EM waves propagation depending on frequency band used (MF, HF or VHF). 6. Define and describe GMDSS subsystems. 7. Compile, compose and compare GMDSS subsystems in case of distress, urgency, safety and routine communications. 8. Infer proper compulsory and additional bibliography of ship's radio station, maintain log book and other documentation properly. 9. Acquire the right to the authorization of the Radio Operator with the general authorization of the Ministry of Maritime Affairs, Transport and Infrastructure.
Course content broken down in detail by weekly class schedule (syllabus)	Introduction to maritime communications. Regulation of maritime radio service; documents and books, radio and postal regulation. Propagation of radio waves and frequency selection. Communications in distress, urgency, safety and general communication. Satellite and terrestrial radio devices, handling and application procedures. Global Maritime Distress and Safety System. **Lectures:** 1. Introduction, GMDSS main features 2. Marine communications principles 3. GMDSS DSC calls types 4. Priority lists and call categories 5. NBDP general features 6. MSI purpose and use 7. IAMSAR 8. Terrestrial alerting and procedures 9. Routine communications procedures 10. Midterm exam 11. Satellite communications principles 12. Visit to Coast Radio Station 13. Inmarsat system principles 14. Satellite alerting and procedures 15. Satellite locations systems **Exercises:** 1. Intro to radio station & simulator 2. Introduction to Digital Selective Call- DSC 3. Procedures for DSC 4. NBDP features and principles 5. VHF ship radio station 6. MF/HF ship radio station 7. MSI receivers 8. DSC alerting 9. Distress procedures using terrestrial systems

	10. Midterm exam 11. Inmarsat systems terminals 12. Visit to Coast Radio Station 13. Satellite systems alerting 14. Routine satellite communications 15. Emergency radio equipment COSPAS - SARSAT, SART & VHF - AIR

Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☒ field work	☐ individual assignments ☒ multimedia ☒ lab exercises ☐ mentoring ☐ (other)

Student responsibilities	Class attendance is compulsory for full-time students, which means that for obtaining the signature the attendance of at least 95% at lectures and 100 % at exercises is required. Midterm exams are taken during the semester. The first midterm exam includes 1st -9th week of instruction and it is taken in the 10th week of classes. Sample questions for exam are available on the web. In order to pass the midterm exam it is necessary to achieve at least 50% of points. Students who do not take a midterm exam for objective reasons or do not achieve the minimum percentage have the opportunity to take the oral exam. The students independently or in a team can handle the default theme using e-learning materials. The final evaluation includes the presence in the classroom, the results of the midterm exams /oral exam and written test. Students who do not pass the midterm exams, and have obtained the signature, are required to take the oral exam in the examination period. The same assessment criteria apply to continuous assessment and to the final exam.

Monitoring student performance *(name the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1.8	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Tests/Midterm exams	1.2	Oral exam		(Other)	
	Written exam	1	Project		(Other)	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Course attendance and participation	min. 95% attendance of lectures, 100% attendance of exercises	20
Midterm exam in lab exercises-Midterm exam	50	30
Total		50 - in this case the student is exempt

		from the oral examination

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Course attendance and participation	20	20
Oral exam or Midterm exam	30	30
Written exam	50	50
Previous activities (including any indication of continuous assessment)	100	20
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Bass, Richard K., GMDSS: A Guide for Global Maritime Distress Safety System-Second Edition, Tele-Technology; 2nd edition, 2007		Yes
	General operator's certificate for GMDSS (IMO Model course 1.25 plus compendium, 2015 Edition) ISBN 978-92-801-16113	2	Yes
	GMDSS Manual, 2017 Edition, IMO Publishing, 2017	2	Yes
	Tetley, L., Calcutt, D.M.: Understanding GMDSS, London, 1994	2	Yes

Optional literature (at the time of submission of study programme proposal)

Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services (Maritime Manual) Edition of 2016, ITU, Geneva, Dec 2016

GMDSS Manual, 2015 Edition, IMO Publishing, 2015

Radio Regulations Edition of 2016, ITU, Geneva, November 2016

General operator's certificate for GMDSS (IMO Model course 1.25 plus compendium, 2015 Edition) ISBN 978-92-801-16113

Restricted operator's certificate for GMDSS (IMO Model course 1.26 plus compendium, 2015 Edition) ISBN 978-92-801-16120

Lees, G. D. and Williamson, W.G.: Handbook for Marine Radio Communications, Lloyds of London Press, Sixth edition, Taylor and Francis Group, 2015

Waugh ,I.: The Mariners Guide to Marine Communications, The Nautical Institute, 2nd edition, London, 2007

Tetley, L., Calcutt, D.M.: Understanding GMDSS, London, 1994

	Inmarsat Maritime Communications Handbook, 2nd Issue, Inmarsat, London, 1995
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoried by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)
Other (as the proposer wishes to add)	

4.11.5.10 Technology of Materials

NAME OF THE COURSE	TECHNOLOGY OF MATERIALS					
Code	VPS105	Year of study	3rd			
Course teacher	Dražen Živković, Ph.D. Nikša Krnić, PhD.	Credits (ECTS)	4			
Associate teachers	Zvonimir Dadić, Ph.D. Jure Krolo, mag.ing.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	30	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Familiarisation with the fundamentals of material technologies, including welding, casting and scraping, and their application					
Course enrolment requirements and entry competencies required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Distinguish the material properties. 2. Perform the independent testing of material properties and interpret them. 3. Distinguish procedures and establish parameters of welding with regard to the welded materials. 4. Select adequate heat processing of the material with regard to the requirements the specimen is expected to meet. 5. Identify the causes of corrosion and adequately protect the material against corrosive effects. 6. Distinguish the basics of casting technology. 7. Familiarise with scraping procedures.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Material division, atoms, crystal lattices, cooling curves. 2. Formation of alloy diagram, types of diagrams 3. Iron: stable and metastable Fe and C alloy diagrams. 4. Production and division of steels, castings and their properties and applications. 5. Light and heavy non-ferrous metals, production, properties and applications. 6. Sintered materials, bearing alloys, polymers, ceramics, composite materials 7. Heat processing of metals: tempering, refining, normalization, annealing. 8. Thermal chemical processing: cementing, nitriding, boriding. 9. Testing of mechanical properties: strength, hardness, toughness, elasticity, dynamic endurance test, corrosion and corrosion protection. 10. Non-destructive testing: penetrants, magnetic, ultrasound, RTG, isotopes. 11. Welding, built-up welding, soldering, metallization. 12. Welding procedures: REL, MIG / MAG, TIG, EPP, gas, EO, laser. 13. Thermal cutting: gas, plasma, arcair, oxyarc.					

14. Scraping processes, tools, materials for tools production.
15. Casting: Models, cores, molding, drip-molding faults.

Exercises:

1. Allotropic modification, Curie point, metallography.
2. Calcination, releasing, improving, cementing.
3. Tensile strenght test.
4. Charpy Toughness Test.
5. Hardness test.
6. Testing of dynamic endurance.
7. Magnetic testing, RTG.
8. Testing by penetration colors and ultrasound testing.
9. Testing of chemical composition, certification of welding procedures and welders - standards.
10. REL, MIG / MAG welding, friction welding.
11. TIG, gas welding, electrical welding.
12. Gas and plasma cutting, arcair, oxyarc.
13. Turning, milling.
14. Grinding, planing, drilling.
15. Design of models, cores and molds.

Format of instruction:

x lectures	☐ independent tasks
☐ seminars and workshops	☐ multimedia
x exercises	x laboratory
☐ entirely online	☐ mentoring
☐ combined with e-learning	
☐ field work	

Student responsibilities: Class attendance (80%) and exercises (100%), going to field classes (100%).

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Attendance	1,5	Research		Practical training	
Experimental work		Report		Homework	
Essay		Seminar work / paper		(other)	
Midterm/End of term exams	2,5	Oral exam		(other)	
Written exam		Project work		(other)	

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students' performance

Elements of evaluation	Achievement(min.%)	Portion of the final grade (%)
Attendance	80	37,5
Midterm exam	50	31,25
End of term exam	50	31,25

Required literature (available in the library and via other media)

Title	Number of copies in the library	Available through other media
Askeland, D. R.: The science and engineering of materials, 6-th edition, 2012		YES

	Bolton W., Philip M.Technology of Engineering Materials1st Edition, Butterworth-Heinemann, 2002.		YES
	Materials science and technology Edited by Sabar D. Hutagalung, e book		YES
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.5.11 Thermodynamics and Heat Transfer

NAME OF THE COURSE	**THERMODYNAMICS AND HEAT TRANSFER**					
Code	VPS106	Year of study	3rd			
Course teacher	Zdeslav Jurić, Ph.D.	Credits (ECTS)	7			
Associate teachers	Živko Jurišić, M.Sc.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			60	0	30	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Distinguishing the properties of ideal and real gases (vapours) and mixtures in the thermodynamic analysis of the processes and cycles of converting heat energy into useful work and vice versa. Decomposition of a cycle into processes. Assessment of the conversion cycle (efficiency). Analysis of humid air properties and related processes. Calculation of losses during conversion of energies or heat exchange. Analysis of heat transfer means.					
Course enrolment requirements and entry competencies required for the course						
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Analyse processes and cycles (ideal and real) involving ideal and real gases (vapours) and mixtures of ideal gases and vapours. 2. Calculate the conversion and level of conversion (efficiency) of heat into useful work on the basis of the First and Second principles of thermodynamics. 3. Calculate the maximum available work and available technical work (exergy). 4. Analyse and solve the processes involving humid air. 5. Analyse and calculate the lower and upper heat value of (fossil) fuel and the combustion products according to their composition. 6. Calculate the amount of heat exchanged and the capacity of heat exchangers. 7. Independently assess and take measures aimed at increased energy efficiency.					

<table>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures and exercises:
1. Introduction and definitions. Basic thermodynamic values. Conservation of mass and energy.
2. Ideal gas and specific heat capacity. Equations of state. Mixing gases and vapours.
3. Main principles of thermodynamics. Internal energy, enthalpy, entropy and heat.
4. Reversible and irreversible processes. Circuit processes and thermodynamic relationships.
5. Entropy and irreversibility. Characteristic irreversible processes.
6. Circular processes of heat engines. Efficiency levels.
7. Open systems with ideal gas.
8. Operative ability of the thermodynamic system (maximum work, exergy).
9. Steam and steam processes.
10. Steam processes, cooling processes – surplus of heat.
11. Humid air and processes involving humid air.
12. Fundamentals of combustion process.
13. Flow of gases and liquids.
14. Heat transfer: conducting, convection. Heat transfer coefficient.
15. Heat transfer: radiation.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☑ lectures
☐ seminars and workshops
☑ exercises
☐ entirely online
☐ combined with e-learning
☐ field work</td><td colspan="3">☐individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Class attendance is obligatory for all students. Class attendance is confirmed by students' signature on, for that purpose, prescribed record sheet. Students have to attend at least 80 % of lectures and 80 % of exercises of prescribed hours. During the semester, for the purpose of continuous self-evaluation, students get tasks which have to solve till next lectures (independently or with help from lecturer/assistant).
Students fulfil the course requirements when minimum class attendance is satisfied.
Studentswho do not fulfil the course requirements, can not take the oral exam. Those students must enrol in the course the next academic year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</td><td>Class attendance</td><td>2,25</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>4,5</td><td>Oral exam</td><td>0,25</td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(other)</td><td></td></tr>
</table>

Assessing and evaluating student performance in class and at the final exam

Assessment and evaluation of full-time students' work

Final evaluation includes class attendance, midterm exams or written exam evaluation and oral exam evaluation. All components have to be evaluated positively, at least with minimum criteria met in order to pass the final exam. The Final exam consists of the written and oral exam.

During semester three midterm exams will be carried out. If all midterm exams are positively evaluated, student is exempt from taking the written part of the first final exam. If one of the midterm exams is not positively evaluated, student, on the first final exam, has a possibility to write the midterm exam which was not positively evaluated.

Students pass the final exam when all criteria are met with minimal requirements: class attendance, written or midterm exams and oral exam.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	Lecture 80% Exercises 80 %	25
1st midterm exam	50	25
2nd midterm exam	50	25
3rd midterm exam	50	25

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	Lecture 80% Exercises 80 %	32,143
Written or midterm exam	50 %	50
Oral exam	70 %	17,857

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-65	Meets minimum criteria	Sufficient (2)
66-79	Average success with noticeable mistakes	Good (3)
80-85	Above average success with few mistakes	Very good (4)
95 -100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Available via other media
Cengel, Y. A., Boles, M. A., Kanoglu, M., Thermodynamics: An Engineering Approach 9th Ed.,McGraw-Hill Higher Education, 2018. (ISBN: 1259822672)		YES
Cengel, Y. A., Introduction to Thermodynamics and Heat Transfer, McGraw-Hill Higher Education, 2009. (ISBN: 0071287736)		YES

Optional literature (at the time of submission of study programme proposal)

Joel, R., Basic Engineering Thermodynamics, in S.I. Units, 5th ed., Harlow, Longman, 1996 (ISBN: 05-82-25629-1)

Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)
Other (as the proposer wishes to add)	

4.11.5.12 Strength of Materials

NAME OF THE COURSE	**STRENGTH OF MATERIALS**					
Code	VPS107	Year of study	3rd			
Course teacher	Marko Vukasović, Ph.D.	Credits (ECTS)	4			
Associate teachers	Milan Perkušić, Ph.D.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Teaching students to observe, in an adequate and critical way, the elements of engineering constructions in marine engineering, shipbuilding and maritime trade. Making conclusions on interdependence of their loads, shapes, dimensions, strains, stresses, strength, rigidity and stability. This basic knowledge is essential for understanding and performing other tasks in marine engineering practice.					
Course enrolment requirements and entry competencies required for the course	Sucessful compeltition of Technical mechanics I					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Define basic terminology in the mechanics of deformable bodies, types of load, stress and strain of construction elements. 2. Explain relationship between stresses and strains, nominal and allowed stress, stress concentration, as well as initial and thermal stresses. 3. Describe stress states (uniaxial, biaxial, triaxial) and explain principal stresses. 4. Define the conditions of strength, rigidity and stability of construction elements. 5. Determine geometrical characteristics of flat cross-sections. 6. Analyse and calculate stresses and strains under basic types of load (axial, shear, torsion, bending, buckling). 7. Understand the ways of solving statically indeterminate problems. 8. Explain the failure theories. Determine equivalent stresses under combined loading. 9. Apply the acquired knowledge in solving concrete tasks within marine engineering practice and make necessary conclusions.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures**: 1. Introduction. Types of load. Stress. 2. Strain. The relationship of stresses and strains. Nominal and allowed stress. 3. Axial load. Analysis of stresses and strains. Calculation of axially loaded bars. 4. Statically indeterminate tasks. Initial and thermal stresses. Stress concentration.					

	5. State of stress. The uniaxial stress state. Biaxial stress state. Mohr's stress circle. 6. Thin-walled pressure vessels. Shear. Analysis of stresses and strains. Calculation of structural elements loaded to shear. 7. Geometric characteristics of flat sections. Static moments of area. Moments of inertia of area. Section moduli of area. 8. Torsion. Stress and strain analysis in bars of circular section. Dimensioning of bars subjected to torsion. 9. Statically indeterminate tasks. Bending. Pure bending. Stresses and strains of bar. 10. Symmetrical bending of forces. Stress analysis of bar. Calculation of strength. 11. Elastic line. Statically indeterminate tasks. 12. Unsymmetrical bending. Buckling. Buckling in elastic range. 13. Inelastic buckling. Calculation of buckling bars. 14. Combined load. Failure theories. Axial load and bending of bars. 15. Bending and torsion of bars with circular section. Dynamic load. **Exercises:** 1. Types of load. Stress. 2. Strain. The relationship of stresses and strains. Nominal and allowed stress. 3. Axial load. Analysis of stresses and strains. Calculation of axially loaded bars. 4. Statically indeterminate tasks. Initial and thermal stresses. Stress concentration. 5. State of stress. Thin-walled pressure vessels. 6. Shear. Analysis of stresses and strains. Calculation of structural elements loaded to shear. 7. Geometric characteristics of flat sections 8. Torsion. Stress and strain analysis in bars of circular section. Dimensioning of bars subjected to torsion. 9. Statically indeterminate tasks. Bending. Pure bending. Stresses and strains of bar. 10. Symmetrical bending of forces. Stress analysis of bar. Calculation of strength. 11. Elastic line. 12. Statically indeterminate tasks. Unsymmetrical bending. 13. Buckling. Calculation of buckling bars. 14. Combined load. Axial load and bending of bars. 15. Bending and torsion of bars with circular section. Dynamic load.	
Format of instruction:	☒lectures ☐ seminars and workshops ☒ exercises ☐ on line entirely ☐mixed e-learning ☐ field lectures	☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring
Student responsibilities	Attending lectures (min 80%) and exercises (100%). In case of insufficient attendance (up to 20% of excused absences), students will be required to carry out additional tasks to compensate for missing lectures in order to obtain the lecturer's signature. Students, who due to illness cannot attend classes, are required to bring a valid doctor's note. Students, who have less than 50% of class attendance, are not eligible for signature and shall enrol in the course again next year. Students who pass two midterm exams are exempt from taking final exam. Students can retake only one midterm exam they have not passed. If students do not pass both midterm exams, they are required to take the final exam (written and oral).	

<table>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Lecture attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Paper</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Insert other)</td><td></td></tr>
<tr><td>Midterm exams</td><td>2,9</td><td>Oral exam</td><td></td><td>(Insert other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Insert other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">
Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Lecture attendance</td><td>80</td><td>28,125</td></tr>
<tr><td>Midterm exam I</td><td>50</td><td>35,937</td></tr>
<tr><td>Midterm exam II</td><td>50</td><td>35,937</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Written exam</td><td>50</td><td>60</td></tr>
<tr><td>Oral exam</td><td>50</td><td>30</td></tr>
<tr><td>Previous activities (including any indication of continuous assessment)</td><td>100</td><td>10</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-64</td><td>Meet minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>65-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-89</td><td>Above average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>90-100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table>
</td></tr>
<tr><td>Required literature (available in the library and via other media)</td><td colspan="6">
<table>
<tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr>
<tr><td>Hibbeler R.C., Mechanics of Materials, Prentice Hall, US, 2011.</td><td></td><td>yes</td></tr>
<tr><td>Vable M., Mechanics of Materials, Oxford University Press, New York, 2002.</td><td></td><td>yes</td></tr>
<tr><td>Hannah J. , Hillier M. J., Applied Mechanics, Longman Group, London 1998.</td><td></td><td>yes</td></tr>
</table>
</td></tr>
</table>

Optional literature (at the time of submission of study programme proposal)	Z. Kulenović, Čvrstoća materijala, Pomorski fakultet Sveučilišta u Splitu, Split 2010. Z. Kulenović, Čvrstoća elemenata pomorskih konstrukcija, Riješeni zadaci, VPŠ Sveučilišta u Splitu, Split 2001. I. Alfirević, Nauka o čvrstoći I, Tehnička knjiga, Zagreb 1995. Z. Kulenović, Ravni nosač, Proračun, Odjel za studij mora i pomorstva Sveučilišta u Splitu, Split 2002.
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split. List of student attendance. Teaching process monitored by Faculty.
Other (as the proposer wishes to add)	

4.11.5.13 Onboard Electric Power System

NAME OF THE COURSE	**ONBOARD ELECTRIC POWER SYSTEM**						
Code	VPE103	Year of study	3rd				
Course teacher	Maja Krčum Ph.D.	Credits (ECTS)	4				
Associate teachers	Tomislav Peša Marko Zubčić	Type of instruction (number of hours in a semester)	L	S	E	F	
			45	0	30	0	
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning					
COURSE DESCRIPTION							
Course objectives	After successfully mastering the course the student will be able to define and explain the basic requirements placed before the ship's electrical machines and devices as well as the entire ship's power system. Explain the basic working principle, basic equations and equivalent schemes of the current machine. They will fully understand the electrical panels and electrical equipment. Compare the effect of different types of electrical machines and analyse simple tasks related to the operation of electrical machines and simulate the actual machine at the appropriate simulator. They will be able to predict the production, distribution and consumption of electrical vessel and analyse the stability of the operation of marine power stations. It will be able to predict the precautions that are necessary for the management of energy systems voltages over 1000 V. The sketch will explain the basic scheme of action in the circuit. Effective will act as team work (according to the requirements of STCW).						
Course enrolment requirements and entry competencies required for the course	Marine Electro Technology – basic principles of electro technology and electromagnetism. Mathematics – vector analysis, derivations and integrations. Application of Information Science and Use of Computers – use of essential functions (preparation for simulator practice).						

Learning outcomes expected at the level of the course (4-10 learning outcomes)	**Student will be able to:** 1. Analyse the conditions in which the ship's power systems set up and operate. 2. Analyse notions, values and principles in the area of on-board low and high voltage technologies ((production and consumption). 3. Draw basic layouts of operation within the electric circuit. 4. Envision distribution of electricity and management of individual power systems high and low voltage. 5. Measure the fifth largest in the electrical part of the power plant. 6. Provide load distribution in the ship's power network. 7. Prepare synchronous generators for parallel operation and regulate the load in the ship's electrical network. 8. Propose electric machine and method of managing the selected machine to meet technological requirements in electric propulsion (synthesis). 9. Solve problems using an engineering approach and the acquired knowledge from the areas of physics, mathematics, essential electrical technology, fundamentals of electric machines, information science (*evaluating*).
Course content broken down in detail by weekly class schedule (syllabus)	LECTURE: 1. The introductory lecture that provides students with introduction to teaching units, learning outcomes, allocation of ECTS credits, method of lecture, evaluating and mode of examination (midterm exam / exam). Fundamentals of on board electrical machines: basic classification; theory of el. machines (the law of electromagnetic flow; force to conductor the magnetic field, the flow law); working principle of the elementary electric machine; basic parts of el. machine; magnetic circuits of el. machine; electric coils of machine; heating and cooling of el. machinery; operating conditions of el. machines. 2. Three Phase Synchronous Generators: the basic principle of synchronous generator (equivalent scheme, vector); operating conditions of synchronous generators; armature reaction of synchronous generators; the impact of power factor, voltage, power and frequency to select the number of generator; unloading generator; voltage drop in the electric. networks (impact factors). 3. Three Phase Synchronous Generators excitation: independently excited synchronous generator; basic working principle of self-excited generator; independent work of synchronous generators; parallel operation of synchronous generators; putting generators in operation; unloading generator; losses and efficiency of synchronous generators. Working principle of synchronous machine as a motor and as compensator. Tree Phase Synchronous Motor - construction, principle of operation and load characteristics. Fault diagnosis a synchronous generator (el. value) and a plan for their removal; analysis of power factor with synchronous generators. 4. Three Phase Asynchronous Machines: three-phase induction squirrel cage / ring motors working principle; equivalent electrical diagram of the asynchronous motor; vector diagram; the concept of slip with asynchronous motors; drawing the torque characteristics of the asynchronous motor; motor starting; speed control; three-phase asynchronous ring motors - speed control; losses and efficiency of three-phase asynchronous motors; single-phase of asynchronous motors. Protection and maintenance of asynchronous motors.

	MIDTERM EXAM I 5. Influence of on board conditions on electric machines and devices: requirements due to the material, volume, mass, requirements due to the climatic and operating conditions; safety and environmental impact of the ship; influencing factors; autonomy and size of the system; technical and technological characteristics. Electrical regulations. Graphical symbols: identification and their meaning; electrical schematics, plans, diagrams and tables; current scheme; layout of the devices; project and technical documentation. 6. Distribution of marine electrical networks: the need to source of el. energy; distribution of direct current; distribution of alternating current; grounded and non-grounded electrical network; distribution of marine electrical network due to the electric supply energy (radial or complex electrical network). Electrical schemes, schemes of distribution of el. energy. 7. Production of electricity on board. The main sources of el. energy: turbo-generator, diesel -generator, shaft generator. Sources of el. energy in case of emergency; uninterruptible power supply; connection from land. Consumers of electricity on board: generally about electrical drives, lighting, thermal loads, other consumers of el. energy. 8. The balance of electricity: power factor for determining the characteristic loads (lighting, load power, engines); connection between the power factor and line current; disadvantages of working with low power factor; vector diagram power (kW, kVA, kVAr); simple examples of improving the power factor. Ship power plant: load calculations; mode distribution centres; installed and peak power the ship's electrical switchboard; examples of calculation. Distribution boards power in the ship's electrical network: distribution boards, additional circuitry; switchgear; the structure of the ship's electrical switchboards; the principle of selective protection. 9. Electrical equipment for power distribution: fuses; circuit breakers; disconnectors; overvoltage protection; relays; contactors, devices for monitoring insulation. 10. Electrical equipment for power distribution: explain the structure of circuit breakers, contacts; methods for extinguishing arc, explanation of dynamic forces that can generate on the contacts; overvoltage and formation overvoltage; voltage and current transformers; the determination of short circuit current and determination the protective equipment to short-circuit current. MIDTERM EXAM II 11. High voltage technology: conditions that introduce application of high voltage on vessels; description of high voltage equipment (HV) and function (circuit breakers, SF6 - arcing, fuses, over - current protection, etc.); electrical machines: motors, generators and transformers; marine high-voltage electrical switchboards and instrumentation; overvoltage protection, insulation coordination. 12. High voltage technology: overvoltage - classification; temporary; switchgear; atmospheric; ultra-fast. Short-circuit current in the ship's high voltage grid. Breakthrough in solid dielectrics. Breakthrough in gaseous dielectrics. The combined dielectrics - in general. Breakthrough in liquid dielectrics - oil; Dielectric strength. The combined dielectrics - in general.

	13. Electric propulsion: the advantages and disadvantages of electric propulsion; examples of classical and electric propulsion; primary electric motors used in electric. propulsion; converters; cycloconvertor 14. Electric propulsion: PODDED propulsion system; remote control PODDED system; rpm operation and steering angle; harmonics distortion (THD factor) and the application of harmonic filters; examples. 15. Safety Precautions needed to operate the power plant voltage above 1000 V. Security measures and technologies applied in the installation of high voltage. MIDTERM EXAM III <u>EXERCISES</u> 1. Getting acquainted with graphic symbols. Fundamentals of electrical machines. 2. Measurement of the electrical power system. 3. Exercise - simulator: General introduction to the work of the simulator. Initial operation of diesel engines 4. Exercise - simulator: Initial operation of turbine. Initial operation of synchronous generator at el. network. 5. Fundamentals of electrical machines: numerical tasks - synchronous generator 6. Numerical tasks - synchronous generator. Numerical tasks –asynchronous machines. 7. Exercise - simulator: Initial operation the shaft generator. Initial operation of another generator –parallel work, synchronization. 8. Example calculation of the balance of electricity. Determination of cos Φ and the parameters that affect the calculation. 9. Exercise - Simulator: Changing the load (simulation I) - Various modes of navigation. Change load (simulation II) – load changes. 10. Exercise - simulator: Electromotor drives (application S) - start-up of asynchronous motors. Electrical Drives (Application II). PRELIMINARX EXAM IV – numerical tasks 11. Protection of electrical circuits 12. Demonstration Exercise I on a High Voltage Distribution Circuit with a High Voltage Switch, Ground Disconnect Bus, Protective Relay and Control Circuits 13. .Demonstration Exercise II on a High Voltage Distribution Circuit with a High Voltage Switch, Ground Disconnect Bus, Protective Relay and Control Circuits 14. Demonstration Exercise III on a High Voltage Distribution Circuit with a High Voltage Switch, Ground Disconnect Bus, Protective Relay and Control Circuits 15.Demonstration Exercise IV on a High Voltage Distribution Circuit with a High Voltage Switch, Ground Disconnect Bus, Protective Relay and Control Circuits	
Format of instruction:	☒lectures ☐ seminars and workshops ☒ exercises ☐ on line entirely ☐mixed e-learning ☐ field lectures	☒ individual assignments ☐ multimedia ☒ lab exercises ☐ mentoring

<table>
<tr><td>Student obligations</td><td>Attendance at lectures is obligatory and records are continually kept (Form F04). Full-time students donot fulfil their obligations if they are absent from more than 20% at lectures and auditory exercises. Lab exercises / practical training required attendance is100%. In case of lectures/exercises complying with the STCW Convention, full-time students do not fulfil their obligations if they are absent for more than 5% from lectures and auditory exercises. Attendance at lab exercises must be 100%.
In case of insufficient class attendance, students cannot obtain the course teacher’s signature and shall enrol in the course again in the next academic year.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>Work on simulator</td><td>0,5</td></tr>
<tr><td>Tests/Midterm exams</td><td>2</td><td>Oral exam</td><td>Alternative to midterm exams</td><td>Exercises</td><td>0,5</td></tr>
<tr><td>Written exam</td><td>Alternative to midterm exams</td><td>Project</td><td></td><td>(other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>Assessment and evaluation of full-time students' work
Student can qualify for the final grade in two ways:
1. The first one - continuous assessment:
Based on actual and estimated points from continuous monitoring, evaluation of class attendance, work on the simulator and evaluation of the midterm exams. During the semester, there are three midterm exams - theoretical knowledge and one midterm exam - practical application (tasks, balance of electrical equipment, electrical schematics). It is important to note that during continuous monitoring each task is awarded two points. A midterm exam is positively evaluated when 50% of test items from different course teaching materials are correct (knowledge of all teaching materials, not just individual parts).
Students who do not take the first / second midterm exam cannot take the second / third midterm written exam. Midterm exam on the tasks is scheduled several times during the semester. The final assessment evaluates a learning activity that involves attendance at lectures, auditory and laboratory exercises and results of the midterm exams.

* Studying is in accordance with the STCW Convention
In case of insufficient number of class attendance, students are not eligible for signature and shall enrol in the course again in the next academic year.
Kontinuirano vrednovanje studenata/ca:
<table>
<tr><th>Elements of evaluation</th><th>Points (%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Lecture attendance</td><td>80-100
(95-100)*</td><td>12</td></tr>
<tr><td>Work in lab-preparation of mid term</td><td>100</td><td>8</td></tr>
<tr><td>I mid term</td><td>50-100</td><td>20</td></tr>
<tr><td>II mid term</td><td>50-100</td><td>20</td></tr>
<tr><td>III mid term</td><td>50-100</td><td>20</td></tr>
</table>
</td></tr>
</table>

IV mid term - calculation, el. sheme	50-100	20

*In accordance with STCW convention.

Grading scale:

Points (%)	Criterion	Grade
0 - 49	Does not meet minimum criteria	Fail (1)
50 - 61	Meets minimum criteria	Sufficient (2)
62 - 74	Average success with noticeable mistakes	Good (3)
75 - 87	Above average success with few mistakes	Very good (4)
88 - 100	Extraordinary success	Excellent (5)

Another method:

It is based on actual and estimated points awarded for class attendance, monitoring students' performance as well as final written and oral exam acievement. If students do not obtain a positive grade in continuous assessment or fail in continuous testing of knowledge during the semester they cannot take the exam in regular examination period. An exam in regular examination period consists of written and oral part. Studenst who obtain a positive grade in written exam can take the oral exam. The oral part of the exam will be held, at the latest, within five days of the written exam.

Final examination:

Elements of evaluation	Points (%)	Portion of thefinal grade (%)
Practical part (written)	50-100	40
The theoretical exam (written and / or oral)	50-100	50
Previous activities	50-100	10

Required literature (available in the library and via other media

Title	Number of copies in the library	Availability via other media
Borstlap, R.; Katen, Hans ten: Ship's Electrical systems, DOKMAR, Maritime Publisher BV P.O.Box 360, 1600 AJ Enkhuizen The Netherland, ISBN 978-90-71500-17-6, 2011.	1	Yes
Hall, D.T.: Practical Marine Electrical Knowledge, Witherby London 1999.	1	Yes
Kothari D. P., Nagrath. I.J.: Electrical machines, McGrew-Hill, New Delhi, 2006.		YES

Optional literature (at the time of submission of study programme proposal)	Adnanes A.K..Maritime electrical instalatios and disel electric propulsion, Tutorial Report/textbook, ABB marine AS Oslo, Norway 2003. McGeorge, H. D., Marine Electrical Equipment and Practice, London Stanford Maritime, 1986.
Quality assurance methods that ensure the acquisition of exit competences	Student surveys, records of teaching, occasional teaching supervision, Analyses at the end of the academic year
Other (as the proposer wishes to add)	

4.11.6 3rd Year, VI Semester

4.11.6.1 Ship Construction and Combat Resilience

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">SHIP CONSTRUCTION AND COMBAT RESILIENCE</td></tr>
<tr><td>Code</td><td>VPO121</td><td>Year of study</td><td colspan="3">3rd</td></tr>
<tr><td>Course teacher</td><td>Luka Mihanović, Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Andrija Ljulj, Ph.D.
Ana Karaman</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for all students</td><td>Percentage of e-learning application</td><td colspan="3"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The main objective of this course is to introduce students with basic dimensions and measures of a ship, construction elements of a ship, basic concepts of ship’s strength, constructional characteristics of various kinds of ships, international regulations on construction.
Also, another objective is to master the fundamental knowledge in fire fighting and preventing fires on-board, and to to be qualified to prevent flooding of a ship and prevent flooding on-board.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5"></td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">1. Describe and explain development of ships through history, and familiarization with international regulations on the construction of ships.
2. Explain and analyse ways and types of constructing a ship, elements of the longitudinal and lateral strength of a ship, and acquiring knowledge of structural elements of a ship.
3. Describe and explain cargo systems and ship equipment for handling cargo.
4. Analyse and demonstrate knowledge and application of main measures and dimensions of a ship.
5. Demonstrate knowledge application of different ship schemes and plans.
6. Describe and explain classification of ships, based on different criteria.
7. Define and explain classification of ships based on: purpose, cargo type, sail category, building material, transport types…
8. Define and explain technical and technological characteristics of different ship types.
9. Define elements of combat resistance of a ship, types of damage on warships when subject to different means of combat and measures the crew should take to maintain ship damage resistance.
10. Describe ways of fighting flooding of water on ships and demonstrating means for fighting flooding.
11. Describing preventive fire fighting measures and demonstrating fire fighting equipment.</td></tr>
</table>

Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. International regulations on construction of ships, historical development of ships. 2. Construction materials, welding, bulkheads and subdivision of a ship, watertight integrity and tightness of doors. 3. Types of ship construction, elements of longitudinal and lateral strength of a ship, structural elements of a ship. 4. Strength and strain of ship construction. 5. Position and characteristics of cargo space, tank space, crew quarters, command bridge and engine room. 6. Cargo systems on different categories of ships, dry cargo ships, liquid cargo ships, special ships. 7. Ship cargo-handling equipment. 8. Ship devices and equipment. 9. Rudder distribution, characteristics of certain types of rudders, screw designs, characteristics of certain types of screws, alternative types of rudders and screws. 10. Geometrical representation of a ship, main dimensions and measures. 11. Plan of a ship and ship lines, general plan of ships of different technologies, determining areas and volumes, centres of gravity of areas and volumes, waterlines methods, ribs, diagonals 12. Classification of ships based on purpose, type of cargo, waters in which they sail, navigation categories, construction material, nature of transport services, modern technologies ships. 13. Constructional and technological characteristics of dry cargo ships. 14. Constructional and technological characteristics of liquid cargo ships. 15. Combustion theory. 16. Fire safety principles. 17. Ways of detecting fire. 18. Fire fighting devices and ship's fire fighting equipment. 19. Ways of extinguishing fire. 20. Types of damages on hull. 21. Ways of detecting and protection against flooding of water. 22. Devices for reducing the effects of flooding. 23. Impact of the amount of flooding on the ability of stopping it. 24. Devices for preventing flooding. 25. Ship's organization for preventing flooding. **Exercises:** 1. Building ships, basics in building, different types of ships, construction materials, welding, visit to a shipyard. 2. Building ships, familiarization with construction of different types of ship, familiarization with structural elements of a ship, types of ship building, elements of longitudinal and lateral strength, subdivision of a ship, visit to a shipyard. 3. Arrangement of spaces on a ship, arrangement of cargo spaces, Command Bridge, crew quarters, engine room, etc., visit to Croatian Navy warships. 4. Rudders and thrusters types of rudders and screws, different types of thrusters, visit to Croatian Navy warships. 5. Ship's deck equipment and devices, deck equipment, anchors, anchor chains, anchor winches, tethering devices and equipment, visit to Croatian Navy warships. 6. Ship's dimensions and measures, identification of freeboard, scales of draught, other dimensions of a ship, practical application, visit to Croatian Navy warships. 7. Different technologies ships,, familiarization with ships of different technologies and their systems, visits to ships in the port. 8. Fire fighting protection (extinguishing fire in an open area using extinguishers and other means on the damage control training area) 9. Extinguishing fire in an indoor area, without fresh air (flash over), and with fresh air (back draft) in "Brodosplit" training area in Split. 10. Protection against flooding of water (preventing flooding, repair work on the damage control training area)

	11. Training students in preventing flooding of water and fire fighting on a Croatian Navy ships.

Format of instruction:	☒lectures ☒seminars and workshops ☒exercises ☐on-line in entirety ☐partial e-learning ☒field work	☐individual assignments ☐multimedia ☐lab exercises ☐mentoring ☐other

Student responsibilities	Lecture attendance is mandatory (there is a record of attendance), and it is 70% of lectures and 100 % of exercise in order to get the right of signature.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Attendance	1	Research		Practical training	1
	Experimental work		Report		Self-study and homework assignments	
	Essay		Seminar paper		(other)	
	Midterm/End of term exam	1	Oral exam	1	(other)	
	Written exam		Project		(other)	

Grading and evaluating student work in class and at the final exam

Lecture attendance is mandatory (condition for obtaining the course teacher's signature is attendance of at least 80°% at lectures). There is a midterm written exam in the 8th week and end of term exam in the penultimate week of the semester. The first one includes learning outcomes from 1 to 3, whereas the second one includes learning outcomes from 4 to 8. At least 50% is required for passing the midterm/end of term exam. Students who, for objective reasons, cannot take one of the exams or fail to obtain the minimum percentage, may retake the test. The final grade includes attendance, midterm/end of term exam results, written and oral exam. Students who fail the midterm or end of term exam and have obtained the signature shall take the written exam in the examination period. The same grading criteria shall be applied to final exam as well as to continuous evaluation of knowledge.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80	30
Midterm exam	50	35
End of term exam	50	35
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)

		80-89	Above-average achievement with few mistakes	Very good (4)
		90-100	Exceptional achievement	Excellent (5)

	Title	**Number of copies in the library**	**Available through other media**
Required literature (available in the library and via other media)	Eyres,D.J., Bruce, G.J., "Ship Construction, Butterworth-Heinemann; 7 edition (2012)		YES
	Tupper, E.c., Introduction to Naval Architecture, Butterworth-Heinemann; 5 edition (2013)		YES
	Russell,P.A., Stokoe, E. A., Reeds Vol 5: Ship Construction for Maritime Engineers, Bloomsbury Publishing, (2016)		YES
	House, D. J., Elements of Modern Ship Construction, Brown, Son & Ferguson (2010)		YES
	Allen M. Bissell, E. James Oertel, Donald J. Livingston, Shipboard damage control, Naval Institute Press (1976)		YES
	Tortora, USMS, Sean P., Study Guide for Marine Fire Prevention, Firefighting, & Fire Safety, Cornell Maritime Pr; 1 edition (2014)		YES
Optional literature (at the time of submission of study programme proposal)	- Royal Navy: The Naval Handbook for Ship Firefighters, The Nautical Institute - Maritime Training Advisory Board (U.S.), Marine Fire Prevention, Firefighting and Fire Safety: A Comprehensive Training and Reference Manual, DIANE Publishing, (1994) - Ship Operation Manuals, SOLAS Training Manuals, SOPEP & BWMP		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.6.2 Military Communication and Information Systems

NAME OF THE COURSE	**MILITARY COMMUNICATION AND INFORMATION SYSTEMS**						
Code	VPO122	Year of study	3rd				
Course teacher	Antonio Šarolić, Ph.D.	Credits (ECTS)	4				
Associate teacher	Tomislav Perić, M.Eng.	Type of instruction	L	S	E	F

		(number of hours in a semester)	30	0	15	0
Status of the course	Mandatory for all students	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	The aim of the course is to introduce students to the organization, concept and documentation of military communication-information systems (CIS) in the Croatian Armed Forces (CAF) and NATO; to understand and use military terminology, documentation and communication devices used in the Armed Forces; and to get an insight in the protection of CIS at a hardware and software level.					
Course enrolment requirements and entry competences required for the course	No special requirements.					
Learning outcomes expected at course level (4-10 learning outcomes)	1. Learn the characteristics of military information-communication system in the CAF 2. Learn the characteristics of military information-communication system in the NATO environment 3. Get an insight in the methods of CIS planning and management within the CAF 4. Understand the concept of CIS in the Croatian Navy (HRVN). 5. Learn standards and procedures of CIS within the NATO environment 6. Use CIS documentation of the HRVN 7. Acquire the knowledge of characteristics of radio-communication systems and devices used in the HRVN 8. Get an insight in the methods of protecting CIS.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** **1. Use of civilian telecommunication (TC) systems for defence purposes,** (CIS for general and special purposes; Frequency distribution range for civilian and military purposes, Standardisation; Use of fixed public TC networks for defence purposes (structure and organisation of work, possibilities); Use of mobile public TC networks for defence purposes (structure and organisation of work, possibilities) **2. Organisation of CIS in the CAF (Principles of organising a military communication system** (Structure of CIS, Data management in CIS, Efficient use of CIS, Interoperability, Flexibility...); Classification of military CISs (according to kinds of devices, connecting leads, mobility, strength, etc.); Elements of military CIS (stationary, mobile, signal posts, nodes, etc.); Management and execution bodies of a military communication system (management bodies, units); Frequency management; Concept of CIS in the CAF) **3. Organisation of CIS in the HRVN** [types of communications (command and control, coordination, notifying, safety of sailing/flying); Organisation of the CI support on the mainland (coast) and at fleet forces; the CIS concept in the HRVN] **4. Organisation of CIS in NATO** (Principles of setting up CIS; Organisational structure in NATO headquarters; Support of agencies; CIS units; NATO standards and procedures of CIS) **5. Organisation of communication traffic in the navy CIS** (Types of communication traffic; Planning of communication traffic, Rules for setting up of communication; CI support documents) **6. Planning of communications and CIS management in naval operations** (Principles of communications planning in naval operations; Contents of documents regulating communications in a naval operation; CIS management in a naval operation) **7. Communication devices and systems on a warship,** [Organisation of CIS on a warship (communication within a ship, communication within a waterway system,					

<table>
<tr><td></td><td colspan="6">communication with other participants in maritime traffic, communication with other participants within a sailing safety system); Structure of a typical ship combat system; Maritime tactical data systems on a ship (links)]
8. Protection of CIS [Protection of CIS from intentional jamming (technical, tactical and organisational protective measures); TRANSEC, COMSEC, INFOSEC, work in an extended range, strength and frequency management, application of tactical and organisational measures (EMCON, surveillance of own traffic); Protection of message contents (encoding techniques, message encoding); cyber defence; Implementation of information security measures in CIS, (principles, legal framework); Protection of information in maritime CIS]

Exercise:
1. Fabrication of CIS planning documents for naval operations (traditional and non-traditional): OPLAN, Annex of CIS along with OPORD,
2. Fabrication of a codebook and communication log
3. Telecommunication devices and systems on a ship: radio communication ones for conveying speech, images and data; ship satellite systems and devices: underwater communication systems,
4. Information systems in the CAF: services and servicing
5. Civilian information systems: services and servicing
6. Signal light communication in a waterway system
7. Fabrication of documents pursuant to NATO procedures
8. Fabrication of tasks pursuant to NATO procedures.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☒ independent assignment
☐ multimedia
☐ laboratory
☐ work with mentor
☐ other</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lecture attendance is mandatory (a record of attendance is kept), and it is 90% of lectures and 100% of exercises in order to obtain the course teacher’s signature. In case of justified absence, students will have the opportunity to compensate for the missing classes during consultation hours and by doing seminar papers in order to meet the required attendance criteria. If the attendance requirement is not met, students shall re-enrol in the course in the next academic year.
There will be a midterm and end of term written exams. For the passing grade, it is required to achieve at least 50% of points on each midterm/end of term exam. Students who do not pass the midterm exam are not allowed to take the end of term exam. Students that have obtained the course teacher’s signature, but have not passed midterm/end of term exam, are obligated to take a final written and oral exam. Students who have fulfilled their obligations, have to apply for the exam during the first examination period in order to get their grade entered, or to take the oral exam if they want a better grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0,8</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>1,2</td><td>Oral exam</td><td>2</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Active attendance of lectures and seminars is monitored. The exam consists of two parts, written and oral. Students can take the written part of exam through two (midterm and end of term) exams. Students don't need to take written exam if they pass the two midterm exams during the semester. The midterm exam comprises chapters 1 to 4 and is taken after completed chapter 4, and the end of term exam comprises chapters 5 to 8 and is taken after the end of lectures and exercises. At least 50% of points are required for passing the midterm/end of term exam. Students who do not take one of these exams or fail to obtain a minimum percentage shall take the written and oral exam in the first examination period. The final grade includes attendance at lectures and results of the midterm/end of term exams. The same grading criteria shall be applied for the examination period and for continuous evaluation of knowledge, as well.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance and activity level at exercises	90/100	20
Midterm/End of term exam	50	30
Total		50 In this case student does not need to take a written exam

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written exam (or midterm/end of term exams)	50	30
Oral exam (theory)	50	50
Other activity (including all continuous assessment factors)	100	20
Total		100

Grading scale:

Points (min.%)	**Criterion**	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above -average achievement with few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

	Title	**Number of**	**Availability**

Required literature (available in the library and via other media)		**copies in the library**	**via other media**
	NATO documentations for CIS: • AJP-6 - "Allied joint doctrine for communication and information systems", 2017 • STANAG 2014 "Formats For Orders And Designation Of Timings, Locations And Boundaries" • STANAG 5042 "Military Telecommunications - Diagrams Symbols"		YES
	John C. Kim, Eugen I. Muehldorf, Naval Shipboard Communications Systems, Prentice Hall PTR, (1995)		YES
	Simon Haykin , Michael Moher; Communication Systems, Wiley; 5 edition (2009)		YES
	Jose Escalona, M., Aragon, G., Linger, H., Lang, M., Barry, C., Schneider, C. (Eds.), Information System Development, Springer International Publishing (2014)		YES
Optional literature (at the time of submission of study programme proposal)	- Richard K. Bass (Author), GMDSS: A Guide for Global Maritime Distress Safety System, Tele-Technology; 2nd edition (2007) - Technology for the United States Navy and Marine Corps, 2000-2035 Becoming a 21st-Century Force: Volume 3: Information in Warfare (1997)- Chapter: 1 Impact of information technology on future naval forces and missions.		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.6.3 Physical Education

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">PHYSICAL EDUCATION</td></tr>
<tr><td>Code</td><td>VPO123</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Domagoj Bagarić, M.P.Ed.</td><td>Credits (ECTS)</td><td colspan="4">0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ivica Bajaj, M.P.Ed.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Use specific exercises for a certain kinesiological activity.
Combine the basic elements of a certain kinesiological activity.
Learn the rules to perform a certain kinesiological activity.
Demonstrate the proper performance of new elements and skills of a certain kinesiological activity.
Organize physical training in order to spend one's free time actively.
Take care of one's health by exercising regularely.
Explain some osteomuscular disorders and exercises for their prevention.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Exercises:
1. Regular testing of physical abilities
2. The development of functional abilities
3. The development of motor abilities
4. Fitness programs
5. Swimming
6. Naval pentathlon (naval obstacles, navy skills training area)
7. Navy skills training (rowing, sailing)</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☐Lectures
☐ Seminars
☒ Exercises
☐ On-line in entirety
☐ Field work</td><td colspan="3">☐ Individual assignments
☐ Multimedia
☐ Lab exercises
☐ Mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Students are required to participate in exercises. Records of student attendance are also kept.</td></tr>
</table>

<table>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td></td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td></td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">During the academic year, students are required to take two regular physical fitness tests to meet the established norms.</td></tr>
<tr><td rowspan="2">Required literature (available in the library and via other media)</td><td colspan="3">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="3"></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Maršić, T. Dizdar, D. Šentija, D.: Osnove treninga izdržljivosti i brzine, Zagreb, 2008.
Kineziološki priručnik za pripadnike OSRH, Zagreb 2005.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competencies</td><td colspan="6">University survey and teaching supervision.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

4.11.6.4 On-board Training III

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">ON-BOARD TRAINING III</td></tr>
<tr><td>Code</td><td>VPN117</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Jakša Mišković, M.Eng.
Tino Sumić, M.Eng.</td><td>Credits (ECTS)</td><td colspan="4">2</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Nenad Sikirica</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>30</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Nautical engineering module</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The main objective of this course is to acquire practical knowledge and skills of ship handling in all conditions and gain experience of living and working on board a ship.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Terrestrial Navigation , Cargo Handling I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">1. Participation in keeping a navigational watch and communication procedures and practical use of navigational and communication instruments and devices.
2. Learning how to be an active member of the crew in daily practices and maintain the ship and ship systems, berthing, unberthing, navigation, ship's stay in port, etc.
3. Gaining experience of living and working on board a ship, within the ship’s crew in a limited ship’s space.
4. Familiarisation with ship's proper log book record and doing ship paperwork in a proper way.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Exercises:
1.Bridge watch keeping procedures
2. Applying International Regulations for Preventing Collisions at Sea
3. Determining position in navigation and its plotting onto a nautical chart using navigational instruments and devices, RADAR, ARPA, AIS, ECDIS, GPS/DGPS and other navigational systems.
4. Regular and emergency steering gear
5. Berthing and unberthing a ship, anchoring a ship, handling marine ropes and steel cables.
6. Procedures of organizing the ship's crew at sea and in port according to SOLAS manual.
7. Determining the ship's position using terrestrial and astronomical navigation.
8. Maintaining bridge communication procedures, both in Croatian and English.
9. Determining search and rescue procedures, handling rescue crafts, emergency activities and handling lifesaving equipment.
10. Maintenance of ship and marine equipment.</td></tr>
<tr><td>Format of instructions</td><td colspan="3">☐ lectures
☐ seminars and workshops
☐ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Student obligations</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">Mandatory 100% attendance, log keeping. Students who do not achieve 100% attendance, ie. miss boarding the school ship are required to re-enroll in the course next year. The schedule and program of the pratcite are realized during boarding on a school or some other appropriate ship, within a 24-hour stay on the ship for a minimum of 5 days.</td></tr>
<tr><td rowspan="5">Screening student work (enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0.7</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Skills demonstartion</td><td>1.3</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td colspan="6">The exam is not taken. In order to obtain a signature, it is necessary to complete 100% of the planned voyage on the school ship, actively participate in the exercises, fill in the appropriate log and complete other set tasks. Students who have completed maritime high school and have more than 6 months of navigation as deck or trainees (or officers) in the last five years will be recognized as navigational practices. Evidence is obtained by inspecting the seaman's book, and by reviewing the authorization of the officer of the navigational watch or by reviewing the log kept by the cadet.

Continuous evaluation of the students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>100</td><td>50</td></tr>
<tr><td>Demonstration of skills and knowledge</td><td>100</td><td>50</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table></td></tr>
<tr><td>Required literature (available in the library and via other media)</td><td colspan="2">Title</td><td>Number of copies in the library</td><td colspan="2">Availability via other media</td></tr>
<tr><td></td><td colspan="2">IMO: Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)</td><td>1</td><td colspan="2">Yes</td></tr>
<tr><td></td><td colspan="2">MARISEC: Bridge Procedures Guide, 1998</td><td></td><td colspan="2">Yes</td></tr>
<tr><td></td><td colspan="2">IMO/ILO Reference Manual</td><td></td><td colspan="2">Yes</td></tr>
<tr><td></td><td colspan="2">Hydrographic Institute publications and charts</td><td></td><td colspan="2">Yes</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">Evidence of students’ attendance, evidence of professors’ attendance, student questionnaire</td></tr>
<tr><td>Other (according to the proposer)</td><td colspan="6"></td></tr>
</table>

4.11.6.5 Electronic Navigation

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">ELECTRONIC NAVIGATION</td></tr>
<tr><td>Code</td><td>VPN118</td><td>Year of study</td><td colspan="3">3rd</td></tr>
<tr><td>Course teacher</td><td>Lea Vojković, Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Filip Bojić</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Nautical Studies</td><td>Percentage of application of e-learning</td><td colspan="3">10%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Master various methods of using electronic navigational devices. Recognize devices and evaluate risks based on knowledge of maritime safety information.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">Terrestrial Navigation</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. Correctly explain and interpret important elements of conducting a ship with the use of electromagnetic waves.
2. Affirm principles of work of echo sounder, speed log and other electronic navigation devices.
3. Describe and interpret the work of non-magnetic compass, radar use in navigation, the use of electronic charts - ECDIS.
4. Independently use ARPA and ECDIS systems in all conditions.
5. Describe and interpret the work of hyperbolic navigation systems, inertial systems, satellite navigation systems, and other electronic navigation systems of high accuracy.
6. Describe and interpret the use of VDR, AIS, TV in maritime navigation as well as integrated navigation systems.
7. Identify and analyse the errors of electronic navigation systems and critically assess their usability.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. The principle of operation and measurement errors of gyro, electronic, laser and satellite compass.
2. The principle of operation and measurement errors of depth sounders and speed logs.
3. Technological development of electronic navigation system.
4. Satellite navigation systems GPS, DGP, GLONASS, Galileo and development directions.
5. Hyperbolic navigation systems..
6. Electronic navigation charts (ENC).
7. ENC .The division into raster and vector..
8. ECDIS system, use and accuracy.
9. Procedures of correction of charts and nautical publications..
10. Inertial navigation, operation principle, accuracy and error..
11. ARPA navigation radar, operating principles, errors, connection with other systems..
12. Automatic Identification System-AIS..
13. Voyage Data Recorder -VDR. Television in navigation..
14. Integrated navigation systems..
15. High-accuracy navigation systems.
Exercises:</td></tr>
</table>

	1. Familiarization with all electronic navigation instruments and devices on navigational bridge. 2. Measuring ships speed and depth, reading gyro and magnetic course, measure errors and calculate corrections. Work with hyperbolic (LORAN C) and goniometric systems. 3. Measure gyro errors, start-up instruments, switch on autopilot from manual mode, dead reckoning. GPS, DGPS – use, route planning using GPS, setting alarms, orthodromic and locosodrome navigation 4. The orientation of the ARPA image, the true and relative motion. Elimination of interference. Fix position. 5. Calculate targets elements, graphical manual and automatic plotting, collision avoidance simulation. Use of ARPA in heavy traffic condition. 6. The principle of operation and usage of Automatic Identification System-AIS, connecting with ARPA and VDR. 7. Use ARPA radars, alarms, collision avoidance simulation, ARPA in search and rescue, SART. 8. ARPA, graphical plotting –true and relative. Operation principle, accuracy and error. Measuring CPA and TCPA. Determination of elements of collision avoidance. 9. ECDIS system, use and accuracy, operating principles, connection with other systems. 10. Route planning by ECDIS system and creating a voyage plan. 11. Route planning by ECDIS system, using alarms, route checking. 12. Voyage monitoring, joint task ARPA/ECDIS/AIS system 13. Voyage monitoring, log keeping and data recording in ECDIS system. 14. Correction of ENC, updating/uploading charts. 15. Integrated navigation system-Integrated Bridge system INS-IBS. Instruments ergonomic and maintenance. Check lists.
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work ☐ individual assignments ☐ multimedia ☐ lab exercises ☐mentoring ☒ nautical simulator practice
Student responsibilities	Regular lectures attendance**,** min 95% Practical tasks done 100%. Irregular lectures attendance will result in a student not obtaining a signature in his/her "Indeks" (Student Transcript Book). Absence of 20% can be compensated with extra tasks through consultations. All other students under 80% of lecture attendance will not get a signature and must enrol in the course again the next academic year. Implemented STCW parts (STCW certificates) in course will have special requirements - 100% of exercises and min. 95% of lectures attendance. If a student has not completed the tasks, he/she cannot obtain the STCW certificate D6C(ARPA -management level). No exemption for this part of course. Exemption applies only for a student owning the STCW certificate D6B (ARPA -working level).

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is*	Class attendance	1,5	Research		Practical training	
	Experimental work		Report		(Other)	

equal to the ECTS value of the course)	Essay		Seminar paper		(Other)	
	Tests	2	Oral exam	1,5	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessing and evaluating student performance

2 Midterm exams in the 10th and 14th week of the semester.

If a student does not pass midterm exam/s (50%), he/she will have the opportunity to take the oral exam and obtainthe STCW certificate (ARPA management level)

If a student has passed 2 midterm exams he/she will get a positive grade.

The requirement for signature in the "Indeks" (Student Transcript Book)is 95% regular class attendance and 100% exercise attendance.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance. active in exercises	95	30
I Midterm exam	50	35
II Midterm exam	50	35
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance	95	30
Oral exam	50	70
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Kjerstad, Norvald: Electronic and acoustic navigationsystems for maritime studies, NTNU, Ålesund, 2016	1	/

	ECDIS passage planning and watchkeeping, 2018 Edition, Witherby Seamanship, 2018	1	/
	Radar Navigation and Maneuvering Board Manual, NIMA, USA, 2005. (https://www.sliderulemuseum.com/Manuals/Pub1310_RadarNavigationAndManeuveringBoardManual.pdf)		Yes
	Becker-Heins, Ralph: ECDIS Basics, A guide to Operational Use of Electronic Chart Display Information System, 1st Edition, Geomares Publishing, 2014	1	/
	Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002.	1	Yes
Optional literature (at the time of submission of study programme proposal)	Richard R. Hobbs.: Marine Navigation-Piloting and Celestial and Electronic Navigation-4th Edition, Naval Institute Press, Annapolis-Maryland, 1998. The Principles of Navigation-The Admiralty Manual of Navigation Vol. 1, The Nautical Institute, UK, 2018. Borje Wallin: Ship Navigation-1st Edition, Dokmar Maritime Publishers B. V., Vlissingen-The Netherlands, 2016. Tetley, L.; Calcutt, D.: Electronic Navigation System, Elsevier Butterworth-Heinemann, Third Edition. 2001.		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.6.6 Cargo Handling II

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">CARGOHANDLINGII</td></tr>
<tr><td>Code</td><td>VPN119</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Rino Bošnjak, Ph.D.</td><td>ECTS</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Zaloa Sanchez Varela</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>45</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Nautical Studies</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The aim of the course is to familiarize students with the characteristics of cargoes in maritime transport, the principles of handling all types of cargo, planning cargo loading on ships of different technologies, safety measures in the transport of cargo.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Cargo Handling I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">1. Explain and interpret the principles cargo planning, and the requirements in the transport of various types of dry, liquid, hazardous, and other types of cargo.
2. Plan the loading / discharging, stowing, lashing various types of cargo.
3. Recognize the dangers with specific types of cargo (dry bulk, containers, liquid, etc.).
4. Confirm safeguards for cargo transportation by sea, particularly hazardous cargo, and procedures in case of leakage, capsizing, falling, failure, etc.
5. Knowledge and use of computer programs applicable to planning and transport of various types of cargo.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lecturers:
1. Principles of making cargo plan.
2. Transport of containers by sea by container vessels. (IMDG 2 class hour)
3. Transport of bulk cargo. (IMDG/IMBSC 1+1 class hour)
4. Transport of grain and minerals in bulk by sea
5. Transport of grain and minerals in bulk by sea (IMDG/IMBSC 1+1 class hour)
6. Transport of various types of cargo by sea (IMDG/IMBSC 1+1 class hour)
7. Transport of liquid cargo – general consideration (IMDG 2 class hours)
8. Transportation of crude oil and products by sea. (IMDG 2 class hours)
9. Transport of liquefied gases by sea. (IMDG 2 class hours)
10. Transport of chemicals by sea. (IMDG 2 class hours)
11. Transport of timber by sea.
12. Transport of refrigerated cargo.
13. Transport of cargo by RO / RO ships
14. Transport of heavy lift.
15. Transport of various types of cargo by sea, Cargo Liquefaction - Nickel and Iron Ores - final consideration

Exercises:</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">1. The principles of making cargo plan.
2. Planning of loading dangerous goods in bulk (IMDG/IMBSC 2+1 hours)
3. Plan of loading containers on a container ship, plans cargo
4. Plan for loading containers on a container ship (Macs3 Loading - Stability)
5. Plan for loading containers on a container ship (Macs3 Loading - Stability)
6. Plan of loading bulk cargo for sea transportation (grain, ore, cement, minerals, coal, etc. (Macs3 Loading - Stability-BULK) (IMBSC 3 class hours)
7. Plan for loading of liquid cargo by sea (Macs3, LCHS) (IMDG/IMBSC 2+1 hours)
8. Plan for loading crude oil and products by sea (Macs3 Loading - Stability, LCHS/VLCC) (IMDG/IMBSC 2+1 hours)
9. Plan of loading liquefied gas for sea transportation (Macs3 Loading - Stability, LCHS/LNG, LPG) (IMDG/IMBSC 2+1 hours)
10. Plan of loading chemicals for sea transportation (LCHS/CHEMICAL) (IMDG/IMBSC 2+1 hours)
11. Plan of loading timber for sea transportation (Macs3 Loading - Stability, bulk carriers)
12. Plan of loading refrigerated cargo by sea
13. Plan of loading RO / RO on board of the ships (Macs3 Loading - Stability/Ro-Ro) (IMDG 2 hour)
14. Plan of loading heavy cargo for sea transportation (Macs3 Loading - Stability/Heavy Lift)
15. Plan of loading various types of dangerous goods for sea transportation - Radioactive cargo, explosives (Macs3) (IMDG 2 class hours)</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒lectures
☐ seminars and workshops
☒exercises
☐on line in entirety
☒ partial e-learning
☐ field work</td><td colspan="3">☒individual assignments
☒multimedia
☐ lab exercises
☐ mentoring
☒simulator practice (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures and exercises are compulsory for students and records of class attendance shall be kept. To get the signature students must attend a compulsory minimum of 80% of lectures and exercises and 100% (95%) on the set, which includestraining.
In case of insufficient number of class attendance students shall neither be given a signature nor will be entitled to take an exam. Absentee notes cannot justify or replace absence from class. Students who, due to illness or other justified reasons, do not meet requirements for obtaining a signature training and have more than 80% of class attendance, will be able to rest up to 100% (95%) do in the additional terms, during the semester and after, but not later one month after the end of classes.
All other students, i.e., those who have achieved less than 80% of class attendance, are not eligible for signature and shall enrol in the course next year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1.0</td><td>Research</td><td></td><td>Practical training</td><td>1.5</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework assignments</td><td>0.5</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests/Midterm exams (L2+E2)</td><td>1.0</td><td>Oral exam</td><td>1.0</td><td>(Other)</td><td></td></tr>
</table>

<table>
<tr><td></td><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">
Assessment and evaluation of full-time students' work
After passing the written exam of exercises, i.e. having assumed all regular requirements, students can take the oral examination. Students who pass the exam or midterm exam during lectures are exempt from taking oral exam. Students who do not pass midterm exam during exercises have to take final exam which consists of two parts.

After passing the written exam of practical training, students can take the oral exam. Students who have passed the midterm exams during lectures are exempt from taking the oral exam.
Students who have not passed the midterm exams have to take the final exam that consists of two parts.
The first part refers to the specified resolution of the problem of stability and load on the ship's construction, equipment for cargo handling and securing of cargo, determining the amount of load draft of the ship. The second part refers to the theoretical part and work on the simulator for cargo handling. In order to apply for the final exam, students need to obtain the course teacher’s signature.
Midterm exams shall be held exclusively during classes, and the final exam within the official examination period.
If a student does not pass all midterm exams relating to practical training (but only some) and obtains the course teacher’s signature, may be credited with work on the simulator applications (as a whole), and given the other two tests with exercises. In this case, the final written exam comprises only the unit that a student has not passed, as well as the assessment of the operation on simulator applications (first or second unit).
Midterm exams I and II relating to practical training can be substituted by appropriate individual assignments only during the semester. It does not apply to work on the simulator for cargo handling. Individual units are considered as passed only in the course of the current academic year, i.e. until the end of scheduled examination periods. If students re-enrol in the course next academic year these units shall not be accepted as passed.
This rule may be exempt if a student has passed the written exam of practical training in entirety, than he/she may be given the opportunity to take the oral exam within one year.
Allocated time for practical training written exam is 3 class periods.
Allocated time for midterm exam of exercises is 2 class periods.
Allocated time for theoretical midterm exam is 2 class periods.

Allocated time for all exams is, as follows:
➢ Final exam (written) max up to 100 min.
➢ Midterm exams (one of the two main units of exercises): max up to 100 min.
➢ Exercise writing time (only during class): max up to 100 min.
➢ Midterm exam(theoretical part): max up to 100 min.

Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance of lectures and participation in the training</td><td>80</td><td>10</td></tr>
</table>
</td></tr>
</table>

I midterm exam (MERLIN) L x 1+ E x 1	75	30
II midterm exam (MERLIN) L x 1+ E x 1	75	30
Continuous assessment in the training on Cargo Handling Simulators	100	15
Individual Tasks	100	15
In total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
The theoretical exam (written and/or oral)	50	15
Numerical tasks-written	50	30
*Elementary knowledge (written or oral)	100	5
Demonstration work on simulator	80	20
Theoretical exam (written/oral)	60	20
Individual Tasks	100	10
In total		100

*Basic concepts of ship stability and cargo loading - a prerequisite for listening to Cargo Handling. Repetition of knowledge and skills acquired at the Naval High School or in the subject "Knowledge of Ship and Cargo". Questions available under course material for "Cargo Handling I & II".

Grading scale:

Points (%)	Criterion	Grade
0-60	Does not meet minimum criteria	Fail (1)
61-71	Meets minimum criteria	Sufficient (2)
72-82	Average success with noticeable mistakes	Good (3)
83-94	above-average success with some errors	Very good (4)
95-100	Extraordinary success	Excellent (5)

***On-line MERLIN SYSTEM + VIDEOTEL training and testing based on the agreement between PFST - VIDEOTEL on the use of all VIDEOTEL modules for training PFST students.

***Minimum for pass 75%

Points (%)	Criterion	Grade
0-74	Does not meet minimum criteria	Fail (1)
75-84	Meets minimum criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Belamarić G.: Cargo Handling I – Authorized Lectures, TextBook & PPT presentation x 13 Volumes, Faculty of Maritime Studies, Split, October 2018.		YES
	Vranić, D., Komadina, P. I dr.: Transport by Chemical Tanker: Safety and environmental protection, Faculty of Maritime Studies Rijeka, 1997.		YES
	IMBSC CODE 2014.		YES
	IMDG Code, 2018 Edition (inc. Amdt 39-18) 2 volumes		YES
	Komadina, P. i dr.: Carriage LNG by Sea, Faculty of Maritime Studies Rijeka, 1995.		YES
	Vranić, D.; Kos, S.: Transport Containers by Sea I and II, Faculty of Maritime Studies Rijeka, 2006 / 2008.		YES
Optional literature (at the time of submission of study programme proposal)	1. Cargo Work For Maritime Operations, D.J. House (formerly Kemp & Young's Cargo Work), Elsevier Butterworth-Heinemann, Oxford, Seventh edition 2005. 2. Komadina, P., Vranić, D., Prijevoz sirove nafte morem", Faculty of Maritime Studies Rijeka. 3. Komadina, P. Dr.: Brodovi multimodalnog transportnog sustava, Faculty of Maritime Studies Rijeka, 1998. 4. Vranić, D., "Tereti u pomorskom prometu", Faculty of Maritime Studies Rijeka		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching inspection.		
Other (as the proposer wishes to add)			

4.11.6.7 Ship Handling Techniques

NAME OF THE COURSE	SHIP HANDLING TECHNIQUES						
Code	VPN120	Year of study	3rd				
Course teacher	Marijan Zujić, M.Sc.Eng. Dario Medić, Ph.D.	Credits (ECTS)	5				
Associate teachers	Boris Kero, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F	
			30	0	45	0	
Status of the course	Mandatory for Naval Nautical Studies	Percentage of application of e-learning	/				
COURSE DESCRIPTION							
Course objectives	Introduce students to the factors affecting the ship manoeuvring, manoeuvring characteristics of the ships, manoeuvring different types of vessels in all conditions,						

	including exceptional circumstances, security measures when manoeuvring and during the ship's stay in a place of mooring. Detailed knowledge and analysis of the International Regulations for Preventing Collisions at Sea. Practical work on exercises and a sailing practice, students should acquire skills in accordance with the STCW Convention.
Course enrolment requirements and entry competencies required for the course	Terrestrial Navigation
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Know in detail, analyse and practically apply the International Regulations for Preventing Collisions at Sea. 2. Describe and analyse the factors that affect ship manoeuvring. 3. Know and interpret the manoeuvring characteristics of the ship. 4. Explain the principles of manoeuvring of different types of ships in all conditions, including emergencies. 5. Confirm the safety precautions when manoeuvring during the ship's stay at the mooring. 6. Being able to steer the ship in the navigation simulators and on a sailing practice. 7. Acquire skills in ship handling.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Introduction, term and division techniques of handling the boat. International Regulations for Preventing Collisions at Sea - lights. 2. Loading / unloading pilot. 3. Mooring and unmooring ships. 4. Modern propulsion systems. 5. Deck equipment, ships mooring equipment, lines, winches, bollards. 6. Manoeuvring in confined waters - the effect of shallow water. 7. Sailing in severe and bad weather conditions –rolling, surging, pitching, swaying, yawing and heaving. 8. Use manoeuvring system. 9. International Regulations for Preventing Collisions at Sea - manoeuvring in reduced visibility zones and traffic separation schemes. 10. Anchoring. 11. Ships squat - change the trim and draft of the ship. 12. Sailing in bad weather and wind effects. 13. Sailing in severe weather conditions - navigation in ice. 14. Manoeuvring in different conditions. 15. Manoeuvring and navigation in traffic separation schemes, narrow channels and emergency situations. VTS. **Exercises:** 1. The International Regulations for Preventing Collisions at Sea-lights. 2. Boarding/ disembarking pilot. 3. Mooring and unmooring ships. 4. Procedure of preparing ships for entering Ports, “Arrival at port” and “Departure from port” 5. International Regulations for Preventing Collisions at Sea - a manoeuvre to avoid a collision. 6. The technique of handling a variety of conditions. 7. Interaction. Types of manoeuvres and safety while manoeuvring the ship. 8. Ship’s propulsion - characteristics. 9. International Regulations for Preventing Collisions at Sea - manoeuvring in reduced visibility. 10. Anchoring. 11. Docking. Safety during the ship's stay in the dock.

<table>
<tr><td></td><td colspan="6">12. Sailing in severe weather conditions: towing, change of course, landing rafts, etc.
13. Manoeuvre MOB-‘’Man Over Board“,
14. Ice navigation - sailing in or near the ice.
15. Use Regulations for Preventing Collisions at Sea and manoeuvring in separated zones.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ individual assignments
☐ multimedia
☒ lab exercises
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures and exercises are compulsory for all students and attendance records are kept.
To get the signature students must attend the compulsory minimum of 80% of classes (lectures and exercises) and 100% (95%) of classes that include work on the simulator/ship and training.
In the case of insufficient class attendance, students shall not be given the right to take the exam.
Absentee notes cannot justify or replace attendance.
Students who due to illness or other justified reasons do not meet requirements for the training signature and have 80% or higher attendance, will be able to complete the rest of 100% (95%) in additional terms, during the semester and after, but not later than one month after the classes end.
All other students, i.e., those who have achieved less than 80% of class attendance are not eligible for signature and are obligated to take the course the following year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,8</td><td>Research</td><td></td><td>Practical training</td><td>0,7</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Self-study and homework assignments</td><td>0,5</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests/Midterm exam</td><td>1</td><td>Oral exam</td><td>1</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
After passing the practical midterm exams from training, students can take the oral part of the exam.
Students who do not pass the midterm exams may take the final exam; the requirement is the course teacher’s signature.
The midterm exams (part of the final exam) are taken only during the classes and the final (entire) exam during the official exam schedule.
If students do not pass all midterm exams (but only some of them), and have obtained the signature, the midterm exams they passed are accepted.
In that case, in the final written exam they can take only the part they have not passed.
The recognition of the entire practical training written exam or one of its two main parts without limitations is valid until the end of the academic year, i.e. until the end of the examination period.</td></tr>
</table>

For students who enrol in the course again the following year, the parts of the exam they have passed are not accepted.
The allocated time for writing the midterm exam (only during classes) is 1 to 2 school classes/hours.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance and participation in the training	100	35
Continuous assessment of laboratory practice	75	45
Continuous lecture verification		20
Continuous assignment of term papers		
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Practical exam (written)		
Theoretical exam (written and/or oral)	50 (100)	70
Past activities (involve continuous assessments)		30
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
David J. House: "Seamanship Techniques", 3rd Edition, 2004, Elsevier Ltd. (https://anzaliport.pmo.ir/pso_content/media/digitallibrary/2013/1/book13/13.pdf)	/	Yes
David J. House: "Ship Handling Theory and Practice", Elsevier, Oxford-GB, 2005.	/	/
Bridge Procedures Guide, International Chamber of Shipping, Witherby& Co. Lt., London.	2	Yes
D.Jašić, G.Belamarić,A.Gundić, Međunarodna pravila o izbjegavanju pravila na moru	4	Yes

	(International Rules of the Roads), Sveučilište u Zadru, Pomorski odjel, Zadar, 2011.		
Optional literature (at the time of submission of study programme proposal)	The Best Seamanship, A Guide to Desk Skills, IMMAJ, 2006. David J. House: Anchor Practice – A Guide for Industry, 2001, Witherby, ISBN 1856092127 D.J.House, Seamanship Techniques shipboard and marine operations, Elsevier, Oxford-GB, 2005. H. Hensen, Tug Use in Port, A practical guide, The Nautical Institute, London, 1997. R.W. Rowe, The Shiphandler's Guide, The Nautical Institute, London, 2000. NP 100, THE MARINER`S HANDBOOK, UK Hydrographic Office, London. H. Hensen, Tug Use in Port, A practical guide, The Nautical Institute, London, 1997.		
Quality assurance methods that ensure the acquisition of exit competencies	University survey, list of student attendance, Faculty teaching inspection		
Other (as the proposer wishes to add)			

4.11.6.8 International Law

<table>
<tr><th>NAME OF THE COURSE</th><th colspan="5">INTERNATIONAL LAW</th></tr>
<tr><td>Code</td><td>VPO124</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Vesna Barić Punda, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Nautical Studies</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><th colspan="6">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="5">The aim of the course is to acquire general and specific knowledge of international relations, international organizations, globalization with regard to international law and policy. Furthermore, the goal is to gain knowledge about the system of international rules on marine and submarine area, delimitation, exploitation, legal regimes that apply in certain parts of the sea, seabed and subsoil, the rights and duties of the state in relation to the different uses of the sea, exploring the structure and content regulations in the field of international law of the sea in armed conflict and acquire skills in better understanding and interpretation of the relevant sources of Croatian and international law in general.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">Distinguish the basic concepts of international law.
Analyze the functioning of the major international organizations.
Identify and compare the legal regimes applicable in certain parts of the sea.
Distinguish between legal institutions of settlement of disputes in international law.
Discern the sources of international law in peacetime and in war.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. Definition and nature of international law.
2. Sources of international law (general principles; customs in international law).
3. Sources of international law (law of treaties, a unilateral act).
4. The State as a subject of international law.
5. International organizations.
6. International law of the sea
7. United Nations Convention on the Law of the Sea.
8. Parts of sea under the sovereignty of the coastal state.
9. Sea area where the coastal State enjoys sovereign rights.
10. Straits and maritime channels
11. Marine areas beyond national jurisdiction of the states.
12. Protection of the marine environment.
13. Peaceful Settlement of International Disputes.
14. The armed conflict (generally, an international armed conflict).
15. The right of armed conflict (war at sea; neutrality in the war).

Exercises:
1. The relationship between international and domestic law.
2. Customs in international law.
3. International agreements.
4. The State as a subject of international law.
5. Types of international organizations.
6. State territory and borders.
7. United Nations Convention on the Law of the Sea (UNCLOS) – basic principles.</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">8. Internal water and territorial sea of the Republic of Croatia.
9. Protected ecological and fishing zone of Croatia. Continental shelf of Croatia.
10. Meaning of the straits and channels for international navigation.
11. High Sea - rights and duties of states.
12. Protection and preservation of the marine environment and UNCLOS
13. Arbitration. The arbitration agreement.
14. Sources of war and humanitarian Law.
15. International conventions on warfare at sea.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Students must attend lectures. Their presence shall be registered and kept in a record.
In order to get the signature, students must attend at least 80% of the lectures
In case of insufficient attendance, the students will not be granted a signature and shall be obliged to enrol in the course the following year.
Students may take the oral part of the exam through continuous evaluations during the semester, by taking mid term tests.
Students who do not pass the mid term test and have obtained the signature must take the written exam during the exam period.
Students who have passed the exam via mid term tests must register for the exam via Studomat for the first exam period after the lectures and during that time must have their grade entered or be tested for a better grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</td><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>2,5</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Class attendance is compulsory for regular students and a precondition for obtaining a signature is attendance at 80% of the lectures.

Mid term tests are organized during the semester. The first mid term test covers lectures 1 to 5 and is taken in week 6 of the lectures. The second mid term test covers lectures from 6 to 10 is taken in week 11 of the lectures The third mid term test covers lectures from 11 to 15 is taken in week 15 of the lectures. The example questions are at the end of all lectures.

To pass the test, one must have at least 50% of the points. Students who for objective reasons do not take the mid term test or do not pass the minimum, have to repeat the exam.

The final mark is given based on presence at lectures and on the mid term test. Students who do not take the mid term test during the semester but have been granted a signature may take the written exam in the exam period. The same rules and criteria apply for the exam period evaluation as for continuous knowledge testing.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance at lectures and active participation in exercises	80	10
Midterm exams I	50	30
Midterm exams II	50	30
Midterm exams III	50	30
In total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Test or mid term test (written)	50	70
Previous activity (including all continuous test indicators)	50	30
In total		100

Grading scale:

Points (%)	Criterion	Grade
0 - 49,9	Does not meet minimum criteria	Fail (1)
50 - 61,9	Meets minimum criteria	Sufficient (2)
62 - 74,9	Average success with noticeable mistakes	Good (3)
75 - 87,9	Above-average success with few mistakes	Very good (4)
88 - 100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Donald R. Rothwell, Tim Stephens: The International Law of the Sea, Oxford, United Kingdom, 2016.	-	YES
Optional literature (at the time of submission of study programme proposal)	United Nations Convention on the Law of the Sea Croatian Maritime code		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by the University of Split, List of student attendance, Teaching process monitoring by the Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001).		
Other (as the proposer wishes to add)	-		

4.11.6.9 Simulator and On-board TrainingIII

NAME OF THE COURSE	SIMULATOR AND ON-BOARD TRAININGIII					
Code	VPS108	Year of study	3rd			
Course teacher	Tino Sumić, M.Eng.	Credits (ECTS)	2			
Associate teachera		Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	45	0
Status of the course	Mandatory for Naval Engineering Studies	Percentage of application of e-learning	0			
COURSE DESCRIPTION						
Course objectives	Prepare students for onboard practice, in accordance with STCW and SOLAS conventions.					
Course enrolment requirements and entry competencies required for the course						
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Upon successful completion of the course, the students will have general knowledge and master basic methods, techniques, and skills that are necessary for handling marine engine systems, main engines, auxiliary engines and generators, boilers, separators, compressors, steering gear and other machinery onboard vessels at management level, in accordance with the requirements of STCW. All these systems are accessible in the existing simulators and onboard available vessels.					
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises:** - Familiarisation with marine engine simulator, its purpose and objectives. - Description of the plant (list of machinery and associated systems – storage tanks, valves, pipeline systems, pumps, heat exchangers, fuel system, filters, electric generators, steam plant, main propulsion plant, control from the engine room, remote control of the propulsion unit). - Measurement gauges (pressure, temperature, level, volume-mass, flow, engine speed, power, voltage and electric power, CO_2 and NO_x contents, indicator diagram). Description of the simulated alarms. Emergency generator startup. Connecting consumers to the emergency generator switchboard. - Preparation and start-up: auxiliary seawater cooling system, auxiliary freshwater cooling system, compressor of start air in emergency.					

	- Preparation of the fuel system, preparation and starting of diesel generator No.1 or No.2, check of all switches on the main and auxiliary switchboard 220V, starting of engine room fan. - Preparation and starting of auxiliary fresh water circuit cooling system of low and high temperature; preparation and starting of the start air main compressor. - Preparation and starting of the compressor of service air, preparation and starting of the freezer. - Preparation and launching of stoked ship's boiler. - Putting in parallel operation of diesel generator and the load distribution. Switching the boiler from MDO to HFO. - Unplanned maintenance - detection and dealing with malfunction and failures in steam generating systems. - Steam-turbine generator. Preparation, starting and operation of the turbo-generator. Connecting the turbo-generator to the electric power system (synchronisation of turbo-generators). Load share between turbo–generators and diesel-generators. Unplanned maintenance - detection and dealing with malfunction and failures in steam-turbine generator. - Turbines for driving cargo pumps. Preparation, starting and operation of the turbines for driving cargo pumps. Cargo pumps operation. Unplanned maintenance - detection and dealing with malfunction and failures in turbines for driving cargo pumps. - Main propulsion engine. Checking the system of the cooling sea water system (through heat exchangers). Checking the system of the cooling fresh water system (through the engine and heat exchangers). Checking the lubricating system (through the engine and heat exchangers). Checking the fuel system. Checking the compressed air system. Checking the system of cylinder liner lubrication. Engine revolution with open indicator cocks. - Preparation procedures, including: checking the closed indicator cocks, checking the fuel system operation, checking the bridge commands, setting the fuel lever to the desired position. Starting the engine and monitoring the operational parameters of the running engine, including: lubricating oil temperature, cooling water temperature, exhaust gases temperature in individual cylinders, checking the temperature at the inlet and outlet of the turbo-charger, engine speed and shaft torque, regular check of level in fuel tanks, regular check of fuel viscosity and fuel temperature, following the orders from the bridge and recording changes in operational conditions. Unplanned maintenance - detection and dealing with malfunction and failures in the above systems. - Principle of evaporator operation. Types of deposits in the evaporators (caused by high and low temperatures). Operation of the evaporator at temperatures above and below 80°C and with working medium density above 96,000 ppm. Principles of decreasing deposits on the evaporator (low pressure including vacuum, magnetic purification-treatment, flexible elements, constant chemical treatment). Use of demister in the evaporator. Control of density in the two-stage evaporator. Automatic operation of the two-stage evaporator. Preparation and treatment of water and protection measures in preparing drinking water from the evaporator. Unplanned maintenance - detection and dealing with malfunction and failures in the evaporator. - Bilge system operation, waste waters, mud, deposits. International convention on releasing waste waters. Waste water system. Preparation of the liquid and solid waste for burning.
Format of instruction:	☐lectures ☒ seminars and workshops ☒exercises ☐*entirely online* ☐ combined with e-learning ☒ field work ☐ independent tasks ☐ multimedia ☐ laboratory ☐ mentoring ☒On board training
Student responsibilities	Attendance at exercises (minimum 95%), attendance at on-board training 100%

	Attendance	1,1	Research		Practical training	

<table>
<tr><td rowspan="4">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar work / paper</td><td>0,9</td><td>(other)</td><td></td></tr>
<tr><td>Midterm/End of term exams</td><td></td><td>Oral exam</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project work</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance</td><td>95</td><td>56,25</td></tr>
<tr><td>Seminar work/paper</td><td>100</td><td>43,75</td></tr>
</table></td></tr>
<tr><td rowspan="5">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Available through other media</td></tr>
<tr><td colspan="4">D. A. Taylor: „Introduction to Marine Engineering“, ISBN 0 7506 2530 9, Elsevier Butterworth-Heinemann, 2003.</td><td></td><td>YES</td></tr>
<tr><td colspan="4">R. L. Sanks: „Pumping Station Design, Second Edition“, ISBN: 1-7506-9483-1, Butterworth-Heinemann, 1998.</td><td></td><td>YES</td></tr>
<tr><td colspan="4">Val S. Lobanoff; Robert R. Ross: „Centrifugal pumpsDesign & Application, 2nd Edition“, ISBN: 0-87201-200-X, Butterworth-Heinemann, 1992.</td><td></td><td>YES</td></tr>
<tr><td colspan="4">Paul C. Hanlon: „ Compressor handbook“, ISBN: 0-07-026005-2, McGraw-Hill, 2001.</td><td></td><td>YES</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Instruction manuals on marine 2-stroke and 4-stroke engines.
Instruction manuals of the ship simulator Konsberg ERS MAN B&W 5L90MC-C L11 VLCC</td></tr>
<tr><td>Quality assessment methods ensuring the desired learning outcomes</td><td colspan="6">Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001).</td></tr>
<tr><td>Other (as considered necessary by the syllabus proposer)</td><td colspan="6"></td></tr>
</table>

4.11.6.10 Marine Engine Elements

<table>
<tr><th>NAME OF THE COURSE</th><th colspan="6">MARINE ENGINE ELEMENTS</th></tr>
<tr><td>Code</td><td>VPS109</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Nenad Vulić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Assistant teachers</td><td rowspan="2">Karlo Bratić</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Marine Engineering</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><th colspan="7">COURSE DESCRIPTION</th></tr>
</table>

Course objectives	Acquiring basic knowledge about the types, load, design-technological and exploitation characteristics of machine elements and constructions, in particular elements of Marine engine systems.
Course enrolment requirements and entry competencies required for the course	Knowledge of Technical Mechanics, Strength of Materials and Engineering Graphics.
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Explain the notions, purpose and categorisation of machine elements. 2 .Describe and analyse the types of load, allowed stresses and materials of Marine engine elements. 3. Explain the design-technological characteristics of the elements for connecting, transfer of power and motion, and for flow. 4. Define the way of calculating and sketch the elements for connecting (welded joints, soldered and glued joints, clamping joints, screwed joints, keys and springs). 5. Define the ways of calculating and sketch the elements for the transfer of power and motion (axles and shafts, bearings, gears and gear drives, belt and chain drives, clutches). 6. Define the ways of calculating and sketch the elements of flow (pipes and pipe closures). 7. Apply the acquired knowledge in solving concrete tasks within marine engineering practice and make necessary conclusions.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Introduction. Basic concepts and classification of machine elements. 2. Loads of machine elements. Strength and allowed stresses of machine elements. 3. Static loads. Dynamic loads. 4. Connecting elements. Welded joints. Types, materials and quality. Calculation of welded joints. 5. Welded pressure vessels. Soldered joints. Glued joints. Clamped joints. The cylindrical clamping joints. 6. Conical clamped joints. Compounds with clamped hubs. Screwed joints. Threads. Screws. Nuts and washers. Materials, fabrication and protection. Insurance of screw joints. 7. Calculation of screw joints. Keys. Longitudinal keys. Profiled shafts. Springs. Bending springs. Torsion springs. 8. Tensile - compression springs. Rubber springs. Elements for transmission of power and motion. Axles and shafts. Materials and design. Calculation of shafts. 9. Sleeves. Radial sleeves. Axial sleeves. Bearings. Sliding bearings. Friction, lubrication and sealing. Constructions and materials. Calculation of sliding bearings. 10. Roller bearings. Performance and labelling. Installing and lubrication. Calculation of roller bearings. Mechanical transmissions. Gear transmissions. Types. 11. Basic quantities. Involutes gears. Materials and production. Spur gears with straight teeth. Correction of profile. Forces and load of shaft. 12. Helical gears. Bevel gears. Worm gears. Strength of tooth. Strength of tooth root. Strength of tooth flanks. 13. Gear transmission in the ship's propulsion system. Belt drives. Chain drives. 14. Couplings. Inelastic. Rigid. Dilatation couplings. Movable. Elastic. Accumulation and damping couplings. Switch-on and switch-off couplings. Gear couplings. Friction couplings. Hydrodynamic couplings. Special couplings. Safety couplings. 15. Elements of flow. Pipes. Material, connecting and calculation. Pipes joints. Valves. Slide valves. Dampers. Cocks.

	Exercises: 1. Loads and stresses of machine elements. 2. Connecting elements. Welded joints. 3. Welded joints. 4. Soldered joints. Glued joints. Clamped joints. 5. Setting of program task. 6. Screwed joints. 7. Screwed joints. 8. Key joints. Springs. 9. Elements for transmission of power and motion. Axles and shafts. 10. Sleeves. Bearings. 11. Mechanical transmissions. Gear transmissions. 12. Gear transmissions. 13. Beltdrives. Chaindrives. 14. Couplings. 15. Receiving of program task.
Format of instruction:	☒lectures ☐ seminars and workshops ☒ exercises ☐ on line entirely ☐mixed e-learning ☐ field lectures ☒ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring
Student responsibilities	Attending lectures (min 80%) and exercises (100%) is obligatory as well as program tasks completion.Lecture attendance is confirmed by students' signature on, for that purposes, prescribed record sheet. In case of insufficient number of arrivals (up to 20% of excused absences), students will be given the opportunity to compensate for the missing lectures with additional tasks. Students, who due to illness cannot attend classes, are required to bring a valid certificate from a doctor. Students, who achieve less than 50% of class attendance are not eligible for signature and shall enrol in the course again in the following academic year.Students who pass two midterm exams, are exempt from the final exam. Students can retake only one midterm exam they have not passed. If students fail both midterm exams, they are required to take the final exam (written and oral).

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,8	Research		Practical training	
	Experimental work		Report		Homework assignments	
	Essay		Seminar paper		Program task	1
	Tests	2,2	Oral exam		(other)	
	Written exam		Project		(other)	

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance	80	37,5
Program task	100	20
Midterm exam I	50	21,25
Midterm exam II	50	21,25

Grading scale:

	<table><tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr><tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr><tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr><tr><td>65-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr><tr><td>80-89</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr><tr><td>90-100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr></table>
Required literature (available in the library and via other media)	<table><tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr><tr><td>1. Hamrock, B. J., Jacobson, B., Schmid, S.R., Fundamentals of Machine Elements, WCB Mc Graw-Hill, US, 1999.</td><td></td><td>yes</td></tr><tr><td>2. Khumi, R.S., Gupta, J.K., Machine Design, Eurasia Publishing House (PVT.) LTD., New Delhi 2005.</td><td></td><td>yes</td></tr></table>
Optional literature (at the time of submission of study programme proposal)	Z. Kulenović, Elementi brodskih strojeva i konstrukcija, Pomorski fakultet Sveučilišta u Splitu, Split 2012. Z. Kulenović, Tehničko crtanje, Sveučilište u Splitu, VPŠ Split, Split 2003. K.H. Decker, Elementi strojeva, Golden marketing–Tehnička knjiga, Zagreb 2006. Z. Kulenovíć, Tlačna posuda, Proračun, Odjel za studij mora i pomorstva Sveučilišta u Splitu, Split 2001. Kulenović Z., Reduktor, Uputstvo za proračun, Pomorski fakultet Sveučilišta u Splitu, Split 2014.
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split. List of student attendance. Teaching process monitored by Faculty.
Other (as the proposer wishes to add)	

4.11.6.11 Fuels, Lubricants, and Water

NAME OF THE COURSE	FUELS, LUBRICANTS, AND WATER					
Code	VPS110	Year of study	3rd			
Course teacher	Luka Mihanović, Ph.D.	Credits (ECTS)	2			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	0	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Familiarisation with the features of fuels, lubricants and water and their application on board vessels.					

Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Define the categorisation of fuels and describe the composition and characteristics of crude oil. 2. Analyse basic processes in crude oil processing. 3. Perform the categorisation of liquid and gaseous fuels, their composition, structure and properties. 4. Analyse the types of fuels for on-board use. 5. Analyse and define the fuel combustion process. 6. Analyse and explain the fuel systems onboard ships and boats. 7. Define the importance of lubrication and the ways of lubricant production. 8. Analyse the categorisation and properties of lubricants. 9. Describe the application of lubricants and lubricant systems onboard vessels. 10. Analyse the use of water, physical and chemical properties of water and difficulties in using water.
Course content broken down in detail by weekly class schedule (syllabus)	1. Fuels. Types of fuel. Production of petroleum products from crude oil: asphalt in residual fuels and its impact on internal combustion engines; general composition of oil; 4 main types of hydrocarbons in oil; complexity of the chemical structure and molecular of hydrocarbons; influence of molecular structure on the physical state of product; line diagram of a simple distillation process with the indicated points of separation of kerosene, gas oil, residual fuel, heavy fuel and lubricants. Marine fuels. Types. Characteristics and problems of use of different types of marine fuel. Standards of the quality of the marine fuel. Adding additives marine fuels; types and properties of the additive. 2. Physical and chemical properties of fuels and lubricants. The density, viscosity, flash point, pour point temperature and turbidity, temperature flash point, the temperature of burning, auto-ignition temperature. The minimum value of the lower flash point for marine fuels (66 °C). The range of the flash point or approximate point of lower flash point for gasoline, kerosene, diesel oil, heavy fuel and lubricants. Ignition and its relationship to point the flash point. 3. Physical and chemical properties of fuels and lubricants. Setting method when the measured density is different than the 15 ° C. A simple definition of viscosity. The importance of stating the fuel temperature to the allegations of its viscosity (viscosity dependence on temperature). Various viscometers which operate on the principle of measuring the time required for passage of a certain volume at a certain temperature. The influence of temperature on the viscosity of the fuel. Approximate viscosities required for satisfactory spray and combustion. Illustration of typical curves of viscosity on temperature. Factors affecting on viscosity. Viscosity matriculation book. 4. Physical and chemical properties of fuels and lubricants. Carbon residue. Detection of water presence in fuel. The inability to accurately measure of water in fuel on board. Alkalinity of oil products. Determination of acidity and alkalinity of oil products. Determination of ash in fuel. List of possible ingredients and characteristics of ash. Impossibility of measuring alkalinity and ash content in fuels on board. The usual fuel tests in laboratories. 5. Combustion. The quality of marine fuels and problems during combustion of heavy fuel: high viscosity, high proportion of aromatic compounds and paraffin, low temperature flash point, low value API graduation, high electrical conductivity, low viscosity. Marine fuels additives: types and properties of additives. Octane number. Fuel ignition fuel quality. Cetane number. Relationship between speed of diesel engine and minimum cetane number. 6. Purification of fuel. Settling tank and its adjusting. Settling tank setting. Filtration methods and possibility of filtration of different sizes particles. Usual

	problems of fuel properties. Standards of quality marine fuels and comparison with other fuels. 7. Fuel system on board: general definitions and rules of fuel system, basic elements of system, fuel storing, transferring and treatment process on board. 8. Lubricating. Importance of lubrication, lubrication places on board, production and composition of lubricants, lubricants division. Lubricants production of paraffin and asphalt base crude oil. Typical values of lubricant lower flash point. The complex oil and their use. 9. Lubricating oil. Characteristics: viscosity, temperature of ignition and pour, total base number, water content, content of insoluble particles, metal content. Classifications and specifications of lubricants according to viscosity and application. Lubricants for marine purposes. 10. Lubricants for marine purposes; marine engine oils, gear oils, hydraulic oils, compressor oils, greases. System oils; oil for low and middle speed engines, oil for auxiliary engines, lubrication systems and their characteristics. 11. Lubrication of marine engines cylinder: conditions, oil consumption, lubrication problems, running cylinder liner, cylinder lubrication with and without crosshead. Lubrication thermal turbines, compressors and other machinery; conditions and requirements. Handling lubricants (oils and greases), waste lubricants. Quality control of oil, oil treatment, recommendations for replacement of lubricating oil. 12. Water treatment. Purpose of feed water treatment. Principles of treatment. Effects of feed water treatment with calcium hydroxide and sodium carbonate. Replacement treatment of caustic soda. Squeeze out the described treatment of use. Use of phosphate with calcium and magnesium components of the boiler water formed by precipitation and sludge. Advantages of using phosphate instead of sodium carbonate. Addiction kind used phosphates on the required alkalinity and the mode of injection (through the supply system or directly into the boiler). Reasons for use of coagulants in the boiler water: chemicals used as coagulants. Colloidal suspensions as product coagulants. 13. Water treatment. Chemicals used to remove dissolved oxygen from boiler water and their effects. Precautions in case of storing and handling with hydrazine. Influence of pH of boiler water in reaction of sodium sulphite. Purpose of defoamers and usual methods of their use. Sharp fracture voidance. 14. Water test. Tests using salinometers and litmus paper as rough indicators of water status - satisfactory rough information. Use of litmus paper. Desirability of precise information for boilers of low output and their importance for boilers of higher performance. Importance of avoiding sea water for boiler feed except in cases of extreme necessity. Procedures of density regulating of sea water if it is used as feed water for low pressure boilers. 15. Water test. Descriptions of following test procedures I: phenolphthalein alkalinity, total alkalinity, caustic alkalinity, chlorides, sulphites, phosphates. Descriptions of following test procedures II: hardness, pH, dissolved oxygen, total dissolved solids, hydrazine. Reasonable approximation of tests depending on the type of boiler.	
Format of instruction:	☑ lectures ☐ seminars and workshops ☐ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring ☐ (other)
Student responsibilities	Lecture attendance is obligatory for all students. The attendance is confirmed by students' signature on, for that purposes, prescribed record sheet. Students have to attend at least 80 % lectures and 100 % exercises of prescribed hours.	

<table>
<tr><td></td><td>In case of insufficient attendance, the course teacher’s signature may be obtained by completing additional tasks (the so-called enhanced independent work). Students who have not attended the classes due to illness must bring a valid doctor’s note. Students with less than 80% of their attendance are not eligible to signature and are required to enrolthe course again next year. Students may take the exam by passing two midterm exams. Students may retake only one midterm exam which they have not passed. If students do not pass the midterm exams, they are obliged to take the written and oral part of the exam.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>0,75</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework assignments</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Tests</td><td>1,25</td><td>Oral exam</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>
Assessment and evaluation of full-time students' work
Attendance is compulsory for full-time students, i.e. a minimum 80% of attendance is required.
There are 3 written midterm exams in the semester. The first midterm exam is written in the eighth week of teaching and covers the first to sixth learning outcomes; the second is written in the penultimate week of teaching and covers the 7th to 9th learning outcomes, and the third is written in the last week of teaching and covers 10th learning outcomes.
Examples of midterm exam questions are available on the faculty website and at the end of each class.
At each midterm exam, a minimum 50% of points is required. Students who do not attend one of the exams for objective reasons or do not achieve a minimum percentage will have the opportunity to retake the midterm exam.
Students can take the final exam by passing three midterm exams. Students may retake only one midterm exam which they have not passed.
If student do not pass the midterm exams, they shall take the written and oral part of the exam.
The final grade includes class attendance, midterm exams results, written exam, seminar paper, and oral exam. Students who do not pass the midterm exams during the semester and have the course teacher’s signature are required to take the written exam within the examination period. The same assessment criteria apply to the examination period and to the continuous assessment.

Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>Lecture 80
Exercises 100</td><td>37,5</td></tr>
<tr><td>1st midterm exam</td><td>50</td><td>20,83</td></tr>
<tr><td>2nd midterm exam</td><td>50</td><td>20,83</td></tr>
<tr><td>3rd midterm exam</td><td>50</td><td>20,83</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td colspan="3">Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>65-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-89</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>90 -100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table></td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Available via other media</td></tr>
<tr><td>A Master’s guide to: Using fuel oil on board of ships, https://madden-maritime.com/wp-content/uploads/2012/10/mg-using-fuel-oil.pdf</td><td></td><td>yes</td></tr>
<tr><td>Fuels and Lubricants Handbook: Technology, Properties, Performance and Testing, George E. Totten, Editor, ASTM Manual Series:MNL37WCD, 2003</td><td></td><td>yes</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">Tireli, E.: Goriva i njihova primjena na brodu, knjiga, Pomorski fakultet u Rijeci, 2004.
Tireli, E.: Maziva i njihova primjena na brodu, skripta, Pomorski fakultet u Rijeci, 2004.
Tireli, E.: Voda i njena primjena na brodu, skripta, Pomorski fakultet u Rijeci, 2004.
Ivušić, V.: Tribologija, Hrvatsko društvo za materijale i tribologiju, Zagreb, 2002.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competencies</td><td colspan="3">Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

4.11.6.12 Marine engines

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">MARINE ENGINES</td></tr>
<tr><td>Code</td><td>VPS112</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Nikola Račić, Ph.D.,
Gojmir Radica, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">6</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Tino Sumić. M. Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>60</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Marine Engineering</td><td>Percentage of application of e-learning</td><td colspan="4">/</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Familiarisation with basic principles of operation of marine diesel engines, their exploitation, failure detection and repair, efficiency of the plant. Understanding the importance of combustion monitoring, maintenance and compliance with international requirements with regard to marine environment protection.
Familiarisation with the engine construction elements, engine systems, and their application.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">Mathematics I,
Technical mechanics I,
Thermodynamics and heat transfer</td></tr>
</table>

Learning outcomes expected at the level of the course (4-10 learning outcomes)	Upon attending the course and passing the exam, it is expected that the students will be able to: 1. Understand basic principles of operation of the internal combustion engines (ICE) 2. Identify and explain the main components of the ICE 3. Understand the exchange of media in the ICE 4. Distinguish the ways of turbocharging the ICE 5. Understand the systems of creating internal mixture in the ICE 6. Define and explain the external characteristics of the ICE 7. Identify and explain the main maintenance procedures of the ICE 8. Describe and compare various types of drive based on the ICE 10. Define and describe the levels of alarm and describe their effect on the operation of the ICE
Course content broken down in detail by weekly class schedule (syllabus)	1. Introduction: The historical development of ICE, engine definition, the principle of obtaining power, fundamentals of energy conversion in the ICE, types of ship's ICE, comparison of efficiencies, the benefits of low-speed engines for propulsion purposes. Production of ships propulsion ICE, type of modern engines, manufacturers and market coverage. The division of marine diesel engines: by style, speed, stroke, position of thr cylinder axis, according to the motor mechanism. Performance and cycle of the marine diesel 2stroke and 4-stroke engine. Analysis of the basic elements of the engine, particularly elements of the piston and piston assembly mechanism. 2. The ideal and the actual process in internal combustion engines: Analysis of thermodynamic efficiency in relation to the compression ratio. Analysis of the relationship pressure ratio psr / p1 and compression ratio for different processes of bringing the heat. Analysis of the relationship pressure ratio psr / pmax and compression ratio for different processes of bringing the heat. The real process 2stroke & 4stroke Engine. Methods of measuring the pressure in the cylinder process, analysis of the change in pressure and temperature. Analysis of the impact of the law of heat release on the engine performance. Indicated and effective engine power and efficiency. engine braking. Effective data of different types of marine engines. The impact of environmental conditions on the performance of the engine. Feature propeller with fixed and variable pitch. The heat balance of the engine. 3. The kinematics and dynamics of the motor mechanism: Basic measurement of the crank shaft. Stroke, speed and acceleration of the piston depending on the ratio of linkage. The harmonic components of the acceleration of the piston (their view). The forces in the crank mechanism (force pressure, translational inertial force, centrifugal force). Forces on the example of a cylinder and balancing them. The forces on the example of multycilinder engine. Arangement of the crak web and firing order. 4. Fuel system for marine engines. Preparation of the fuel mixture for diesel engines. Fuel injection system (conventional, common rail). Regulation of fuel supply. Air flow in the cylinder. Arangement of the combustion chamber. Supercharging. 5. Problems with the use of heavy fuel. The combustion in the engine. Effect of different methods of injection. Combustion law. Uni-fuel & Dual fuel system. Working performance of the engine. 6. Testing of the engine. Engine power, mean pressure, specific fuel consumption. Factors affecting the engine power. The influence of the environment. Load diagram. Hull resistance and heavy propeller. 7. The characteristics of the load. Speed characteristics. Propeller characteristics. The universal characteristics. Heat balance. Emissions of the internal combustion engine. The creation of pollutants. Metods for reduction of harmful emissions. Measuring emissions. The regulations on the limitation of emissions.

	8. Electronically controlled engines - general management procedures in cases of emergency. 9. Engine Components: Bedplate (structural design, materials, causes cracking of the bedplate, centering, bedplate bolts, tightening mode, checks, main bearings, crank shafts (materials, deflection, reference marks on the crankweb, oil channels hole). Bearings (materials, construction, damage, check clearances, assembly. Flywheel (function, performance). Trust bearing (function, performance, clearance measuring, temperature measuring). A-frame (design, materials, fitting, x-head guide for 2-stroke engine). 10. Cylinder block (design, materials, connection). Tie rods (function, performance, materials, assembly processes, tightening, problems due loose or cracks . Cylinder liners (materials, cooling, fitting for lubrication, lubrication reason, abnormal lubrication - too much oil, running in new liner , the consequences of excessive wear, wear limits, measuring wear, impact L / D ratio on power and thermal load). lubricating (types, construction, operation, phase). the cylinder head (valves, construction, maintenance). the exhaust (and inlet) valves, drive, and the elimination of the causes of failure, the impact of sodium, vanadium and sulfur in the fuel, cooling valve, the valve seat material, the principle of rotation of the exhaust valve). 11. Connection rod (function, materials, bearings). X- head (function, constructive characteristics, alignment, lubrication. Piston rod (materials, structural design, stuffing box, connecting with a piston). The piston (performance, 2-stroke, 4-stroke, materials, cooling, circulation of the cooling medium, the temperature on a piston , alignment of the piston mechanism). Piston rings (function, materials, types, running in, defects and damages, reasons, Corrective Actions, wear measurement, inspection, diagnostics, the factors that influence the frequency of inspection and maintenance, maintenance intervals). Safety system to prevent an explosion inside the crankcase (graviner, safety valves). Fire alarm system scaveninge space. Camshaft (construction, operation). the exhaust manifold. scaveninge air collector. air coolers (performance, diagnostics). Turbochargers (performance, lubrication, diagnostics). centering engine - shafting - stern tube, vibration, transverse forces, side brackets. vibration (reasons). 12. Marine engine systems: The system of lubricating oil for marine diesel engine (2 stroke and 4 stroke engine, lubricating characteristics of the oil). The manner of lubrication of the bearing on the ship's slow speed-diesel engines. Lubrication of motor bearings (hydrodynamic lubrication. The impact of bearings clearances, viscosity, speed and pressure on the bearing. Lubrication of the Michell thrust bearing, the conditions for the formation of the oil film, the typical pressures of lubricating oil). The consequences and the way to prevent contamination of lubricating oil (wear, pitting, emulsification, oxidation, varnishing). Lubrication during running-in a new engine or after the procedure of the maintenance Maintenance of lubricating oil (abrasive particles, oxidation, water). Diagnostics in lubrication (oil analysis). 13. Eengine starting system (the guiding principle of operation of starting air valves, materials, safety elements of the system, the working principle of the starting air distributor). Engine reversing r (elements of the system reversing, reversing mode). Safety measures in the reversing and starting system . Air control system. Quality control air (dryer, filters, instrumentation, automatic drainage, pressure control). 14. Sea water cooling system (fresh water central cooling system, cylinder cooling, Cylinder cower, exhaust valve, air cooler, turbocharger, pistons). Cooling oil system (overheat effect on the cooling oil, diagnostics and maintained system). Maintenance of cooling water (additives). 15. Safety systems - fire and influential factors of fire in the exhaust gas boiler. Fire in scaveninge air space (symptoms, procedures firefighting) systems for

	prevent explosions in starting air system. The causes of the explosion inside the crankcase. Detection and safety systems. **Exercises:** 1. Basic parameters of the cylinder unit mechanism. Stroke, speed and acceleration of the piston depending on the ratio of linkage. The harmonic components of the acceleration of the piston (their view). The forces in the crank mechanism (force pressure, translational inertial force, centrifugal force). 2. Analysis of changes in pressure and temperature in the cylinder. Indicated and effective engine power and efficiency. Engine braking. 3. Analysis of thermodynamic efficiency in relation to the compression of process of bringing the heat. Analysis of the relationship pressure ratio pmax / pm and compression ratio for different processes of bringing the heat. Analysis of the relationship pressure ratio pmax / and compression ratio for different processes of bringing the heat. The real process and 2-stroke and 4 stroket Engine. 4. Preparation of the fuel mixture of diesel engines. Capacity control fuel consumption. Problems with the use of heavy fuel. The combustion in the engine. Effect of different methods of injection. Law combustion. The influence of process temperature. 5. The performance of the engine. Engine power, mean pressure, specific fuel consumption. VIT system, factors affecting the engine power. The influence of the environment. The characteristics of the load. Speed characteristics. Propeller characteristics. Hull fouling. Working with heavy propeller. 6. Taking and analysis of indicator diagrams of the working process of the engine. Analysis of changes in pressure and temperature in the cylinder. Indicated and effective engine power and efficiency. engine braking. Estimation of the effective engine power without the indicator chart based on matriculation book of the HP pumps and turbocharger speed. 7. Emissions of the internal combustion engine. Reducing emissions of NOx. Emulsification. SCR. 8. Main and crank pin bearings clearance measurement and analysis 9. Measurement and analysis of the crank shaft deflection 10. Measuring and adjusting the clearances of the intake and exhaust valves 11. Measuring and adjusting the timing of the start of fuel injection into the engine cylinder. 12. Measurement and analysis of wear of piston rings. Piston ring, wear and damage, examination, diagnosis, factors that affect the frequency of inspections and maintenance, and maintenance intervals), and cylinder liner. 13. The system of cooling sea water (central cooling system fresh water, cylinder liner, cylinder cower, exhausts valves, scaveninge air, turbocharger, pistons cooling). Cooling oil system (overheatig effect on the cooling oil, diagnostics and maintained system). Maintenance of cooling water (additives). 14. Reversing and starting systems, safety systems. 15. Engine operating with turbocharger brakedown, working conditions at sea shallow waters, engine operating with breckdoen of the cylinder liner. Endine emergency operating - transferring of operating from remote to the local.	
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises	☐ individual assignments ☐ multimedia ☐ lab exercises

<table>
<tr><td></td><td colspan="6">☐ entirely online
☐ combined with e-learning
☐ field work</td><td colspan="2">☐ mentoring
☒ Simulator exercise</td></tr>
<tr><td>Student responsibilities</td><td colspan="8">Lectures are obligatory for students because records of attendance are kept. To get a signature, students must attend a minimum of 95% of lectures and 100% of exercises. In case of non-fulfillment of the above condition, the signing is conditioned by the preparation of additional tasks (seminar paper). Students who do not attend classes due to illness must bring a valid medical certificate. Students who achieve less than 50% of attendance are not eligible to sign and are required to re-enroll in the course again the following year.
During the classes, it is planned to take a mid term test, which will be held after certain units of material have been covered in lectures and exercises. Students have the opportunity to pass the exam by continuous evaluation during the semester by taking 3 mid term tests. The student is required to attend all mid term tests. Students may retake only one colloquium that they did not pass. Students who do not pass the colloquia during the semester, and have a signature, are required to take a written / oral exam within the exam period. Students who have collected a sufficient number of points during the class are required to register for the exam through Studomat for the first exam period after the lecture and in the exam period to come to the grade or answer for a higher grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</td><td>Class attendance</td><td>1,0</td><td>Research</td><td></td><td>Practical work</td><td>1,0</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Self-study</td><td>1,0</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Tests</td><td>2,0</td><td>Oral exam</td><td>1,0</td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td></td><td></td><td>(other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="8">During the semester, active participation in classes and exercises is controlled. 3 mid term test are written in the semester. The first mid term test, which includes the 1st to 5th lectures, is written in the fifth week of classes, the second mid term test , which includes the 6th to 10th lectures, is written in the 10th week of classes, and the third mid term test , which includes the 11th to 15th lectures, is written in the 15th week of classes. Students may retake only one mid term test that they did not pass. Students who do not pass the mid term test during the semester, and have a signature, are required to take a written / oral exam within the exam period. Examples of mid term test questions for students are available on the faculty intranet pages. At each mid term test, it is necessary to achieve a minimum of 50% of points for passing. Students who do not attend one mid term test for objective reasons or do not achieve a minimum percentage have the option of correction. The correction of the mid term test will be organized in the term of the exam on the 1st Exam term. The mid term test is held in writing, and for a positive grade it is necessary to achieve at least 50%. A student who passes all the mid term test positively is exempted from the written / oral exam and, depending on the achieved result, his / her grade is entered in the index on the first exam term of the final exam. Students who have passed one of the mid term test or material are recognized as part of the passed final exam. The rest of the material is taken in a written / oral exam. The final grade includes attendance at classes and the results of the mid term test. Students who do not pass the mid term test during the semester, and have a signature are required to take a written</td></tr>
</table>

/ oral exam within the exam period. The same assessment criteria apply to the examination period as to the continuous assessment of knowledge.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final mark (%)
Attendance	Lectures 95 Exercises 100	32,142
Midterm I	50	19,047
Midterm II	50	19,047
Midterm III	50	19,047

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Test (written)	50	34,93
Oral exam	50	34,93
Previous activity (including all continuous test indicators)	Lectures 95 Exercises100	32,142
In total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	**Number of copies in the library**	**Available via other media**
1. D. Woodyard: „Pounder's Marine diesel engines and gas turbines“, Elsevier, 2004		YES
2. K. Kuiken “Diesel Engines for ship propulsion and power plants Part I”, Zwolle, Netherlands, 2012.		YES
3. K. Kuiken “Diesel Engines for ship propulsion and power plants Part II”, Zwolle, Netherlands, 2012.		YES
4. Lectures of the course holder		YES

Optional literature (at the time of submission of study programme proposal)	/
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)
Other (as the proposer wishes to add)	

4.11.6.13 Marine auxiliary engines and machinery

NAME OF THE COURSE	MARINE AUXILIARY ENGINES AND MACHINERY						
Code	VPS111	Year of study	3rd				
Course teacher	Gojmir Radica, Ph.D. Luka Mihanović, Ph.D.	Credits (ECTS)	6				
Associate teachers	Željko Penga, Ph.D. Tino Sumić	Type of instruction (number of hours in a semester)	L	S	E	F	
			60	0	15	0	
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning					
COURSE DESCRIPTION							
Course objectives	Familiarisation with operation of the marine auxiliary engines and machinery.						
Course enrolment requirements and entry competencies required for the course	Technical mechanics II, Marine engine elements.						
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Explain the design, construction and way of operation of the shafting designs. 2. Define the main values and sizes of the ship's pumps. Explain the design, construction and way of operation of the ship's pumps. 3. Define the main values and sizes of the ship's compressors and fans. Explain the design, construction and way of operation of the marine compressor and fan designs. 4. Define the main values, sizes and the way of selecting the marine strainers and filters. Explain the design, construction and way of operation of the individual marine strainers and filters. 5. Explain the design, construction and way of operation of the ship's steering gear and deck equipment. 6. Define the main values, sizes and the way of calculating and selecting the marine heat exchangers and pipelines. 7. Explain the design, construction and way of operation of the marine environment protection equipment. 8. Explain the design, construction and way of operation of the ship's safety equipment.						
Course content broken down in detail by weekly class schedule (syllabus)	1. Introduction, shafting, intermediate shafting, propeller shaft. 2. Thrust bearing, shaft coupling, stern-tube and glands, bearings. 3. Auxiliary boilers. 4. Power drive, gears and couplings, ship's propeller. Pipelines. Ship's pumps: introduction, categorisation. 5. Pump drive and control, on-board use of pumps, special requirements. Energy conversion, pump's supply height, efficiency, inlet/suction height, cavitation. 6. Reciprocating, air and centrifugal pumps. 7. Rotation volumetric pumps; screw / gear / blade pumps. Compressors and fans, introduction.						

	8. Processes in the compressor, multi-stage compressors and compressor components. Operation of the compressor, separation of condensate and oil, malfunctions, automatic operation of the compressor. 9. Fans, selecting the fans, designs and construction. Strainers and filters. 10. Separation of liquids and solid particles. Categorisation of centrifugal purifiers, designs and ways of operation. Purification of oils by centrifugal purifiers. 11. Oily water purification equipment. Appliances for treating black and grey waters. 12. Steering gear mechanism, way of moving the rudder. Hydraulic steering gear, handling the steering mechanism. 13. Deck equipment, introduction. On-board cranes and derricks. 14. Warping winch, windlass, and windless drive. Heat exchangers, coolers, heaters, condensers, evaporators and de-aerators. 15. Refrigerating plant, main components of the refrigerating plant, designs.
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☒ field work ☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring ☐ (other)
Student responsibilities	Attendance of lectures, exercises and field work

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Class attendance	1,8	Research		Practical training	
Experimental work		Report		(Other)	
Essay		Seminar paper		(Other)	
Tests	4,2	Oral exam		(Other)	
Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Upon completing lectures and exercises dealing with the given teaching matter two midterm exams are administered. The midterm exams refer to the theoretical part of the syllabus (as described in the executive syllabus) and are taken in written form. It is necessary to provide at least 50% correct answers and explanations to pass them. The student who has passed both midterm i.e. midterms is exempt from taking the written/oral exam. One passed midterm is recognised as a partly passed final exam. The remaining practical and theoretical matter is subject to testing. Midterms and exams can be taken only by the students who have met the requirements of activity (attendance in class, exercises and field work).

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final mark (%)
Attendance	80	31,25
Midterm I	50	34,375
Midterm II	50	34,375

Grading scale:

Points (%)	Criterion	Grade
0-50	Does not meet minimum criteria	Fail (1)

	51-61	Meets minimum criteria	Sufficient (2)
	62-74	Average success with noticeable mistakes	Good (3)
	75-90	Above-average success with few mistakes	Very good (4)
	91-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media	McGeorge, H.D.: Marine Auxiliary Machinery, Butteworth-Heinemann, Oxford, 2002.		DA
Optional literature (at the time of submission of study programme proposal)	/		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001).		
Other (as the proposer wishes to add)			

4.11.7 4th Year, VII Semester

4.11.7.1 General Tactics

NAME OF THE COURSE	GENERAL TACTICS					
Code	VPO125	Year of study	4th			
Course teacher	Mladen Pahernik, Ph.D.	Credits (ECTS)	6			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning	20			

COURSE DESCRIPTION	
Course objectives	To prepare and enable students to apply theoretical standpoints of the war-time military doctrine. To comprehend human capabilities during combat in relation to the mission, time and space. To understand military viewpoints of the tactics of branches and occupations through capacities, techniques and procedures that can be measured and coded. To recognize the use and development of the modern weaponry.
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	To define basic facts and notions of the general military tactics. To analyze facts related to the mission, enemy, space and time. To use techniques and procedures in solving combat missions within specific environment. To differentiate forms of joint operations in the battlefield and in international environment. To assess complex problems of leading units in unpredictable circumstances.

	To classify and use organic entities of the military units for a specified purpose.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Introduction (1) 2. Introduction into tactics (2) a)The art of tactics b)General tactical notions and graphical control measures 3. Assignment, organization, role and missions of the CAF (2) 4. Services of the CAF (3) 5. Movement (2) a) Methods of unit movements 6. Patrols (2) 7. Engagement by fire (3) 8. Defense (5) a) Types of defensive operations b) Defense of the area c) Mobile defense d) Retreat 9. Attack (5) a) The basics of attack b)Movement to establish contact c) Attack d) Exploitation of success e) Pursuit 10. Urban operations (2) 11. Auxiliary tactical operations (2) 12. Combat joint functions (16) a. Information and intelligence operation (2) b. Maneuver (2) c. Engagement by fire (2) d. Protection of forces (2) e. Support (2). f. Command and control (6) Exercises: 1. Graphical control measures (3) 2. Assessment of the land (MTETTC; OAKOC) (3) 3. Movement (6) 3. Fire (6) 4. Attack (6) 5. Defense (6)
Format of instruction:	☒lectures ☐ seminars ☒ exercises ☐*on line* in entirety ☐ field work ☒ individual assignments ☒ multimedia ☐ lab exercises ☐ mentoring
Student responsibilities	Students are required to attend lectures and attendance records are kept. In order to obtain the course teacher's signature, students must attend at least 80% of lectures. In case of lower attendance students are denied the signature and are required to take the course again the next academic year. Students are required to attend exercises and attendance records are kept. In order to obtain the course teacher's signature students must attend at least 90% of exercises. In case of lower attendance in class, students are denied the signature and shall take the course again the next academic year. In order to obtain the signature students have to meet requirements of class attendance and have to carry out the exercises. Exam may be taken through continuous evaluation during semester by passing midterm exams or final written exam. Students who fail midterm exams and have obtained the signature are required to sit for written exam within examination period.

<table>
<tr><td></td><td colspan="6">Students who have obtained a sufficient number of credits in class are required to apply for the exam via Studomat(online student portal) for the first examination period and to have their grade entered within examination period or to undergo exam for a better grade.</td></tr>
<tr><td rowspan="6">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td>1</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Self-study and homework assignments (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Midterm exams</td><td></td><td>Oral exam</td><td>2</td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td>2</td><td>Project</td><td></td><td>(other)</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
Two midterm exams are written per semester. The first midterm exam comprises the teaching materials from the 1st to the 7th lecture and is written in the 8th week of the teaching, the second midterm exam that comprises teaching materials from the 9th to the 15th lecture and is written in the 15th week of the teaching. On each midterm exam students are required to achieve a minimum 60% of points for a positive grade. Students who do not take one/both midterm exams or do not realize a minimal percentage are not given the opportunity for correction. The final grade comprises attendance and active participation in lectures, grade for exercises (practical training) and continuous testing.
Students who fail midterm exams during semesters and have obtained a signature, are required to sit for the written exam witnin the examination period. The same evaluation criteria are valid for the examination period as well as for continuous testing of knowledge.

Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance and active participation in lectures</td><td>90</td><td>10</td></tr>
<tr><td>Continuous testing of knowledge (partial exams / midterm exams)</td><td>60</td><td>70</td></tr>
<tr><td>Exercises</td><td>60</td><td>20</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
</table></td></tr>
</table>

	Theoretical exam (written)	60	70
	Previous activities (attendance and active participation in lectures)	90	10
	Exercises	60	20
	Total		100

Grading scale:

Points (%)	Criterion	Grade
0-60	Does not meet minimal criteria	Fail (1)
61-70	Meets minimal criteria	Sufficient (2)
71-80	Average success with noticeable mistakes	Good (3)
81-90	Above-average success with few mistakes	Very good (4)
91-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in library**	**Availability via other media**
Required literature (available in the library and via other media)	1. UsArmy, FM 3-90 Tactics, translation GS CAF, Zagreb	10	YES
	2. GS OSRH Doctrine of the CAF, Zagreb, 2010.	20	YES
	3. GS OSRH , APP-6A Military symbols, translation, Zagreb, 2008	20	YES
Optional literature (at the time of submission of study programme proposal)	US Army, FM 3-21.8 TheInfantryRiflePlatoonandSquad, 2007		
Quality assurance methods that ensure the acquisition of exit competencies	University survey, list of student records, supervision of teaching at the Faculty		
Other (as the proposer wishes to add)			

4.11.7.2 Radio Detection Systems

NAME OF THE COURSE	**RADIO DETECTION SYSTEMS**					
Code	VPO126	Year of study	4th			
Course teacher	Zoran Blažević, Ph.D.	Credits (ECTS)	3			
Associate teachers	Boško Jerončić Grba, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning	20			

COURSE DESCRIPTION	
Course objectives	• Describing and increasing the knowledge about radiolocation principles, impulse radar operation principle, and the role of all main radar subsystems. • Differentiating between specific radar types and perceiving their advantages and disadvantages. • Considering and investigating modern solutions in military radar technology, and their application in other distinguished naval forces. • Explaining the organization of coastal surveillance and navigation, and geographical characteristics of lithographic Adriatic area from the aspect of radar surveillance. • Visualization of possibilities and characteristics of surveillance and targeting radar operation of Croatian Navy.
Course enrolment requirements and entry competencies required for the course	
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Students will be able to: 1. Develop competencies in individual and team work in the process of using certain radar subsystems (surveillance, targeting, and navigation). 2. Recognize the relation between certain tactical and technical radar requirements. 3. Evaluate and perceive advantages and disadvantages of certain radar types at the disposal of Croatian Navy. 4. Analyze, remember and reproduce the procedures followed during radar operation. 5. Describe and discuss coastal surveillance and notification (OMIN), and geographical characteristics of Adriatic coast from the aspect of radar surveillance. 6. Consider and analyze characteristics of surveillance and targeting radars of Croatian Navy. 7. Discuss the role of radars in Croatian Navy sensor network and creating and distributing processed data through the telecommunication architecture of Croatian Navy.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. **Radar components, 4** (TRANSMITTER – synchronizer, , modulator, VF generator - magnetron, TWT tube, semiconductor transmitter modules; RECEIVER- VF amplifier, local oscillator, mixer, IF amplifier, detector, video amplifier, the type of amplifier control; ANTENNA SYSTEM - characteristics, radiation pattern, parameters, waveguides, termination, duplexer, antenna with wide and narrow beam width, parabolic, cassegrain antennas, linear antenna array with phase shift; DISPLAY – purpose, electronic markers and symbols, display types A, B, C, E, RHI, PPI, synthetic display– raster scanscope). 2. **Impulse radar**, **4** (operation principle; block diagram, target distance determination, direction determination; EMS; the impact of atmosphere on signal of different frequencies; impulse transmission; frequency bandwidth; average power; target resolution; range; target tracking; impulse radar parameters; multi-frequency radar; RCS; clutter; radar types; Doppler frequency shift; coherent oscillator). 3. **Modern radar solutions**, **6** (continuous wave radar (CW); MTI radar; impulse-compression radar; synthetic aperture radar (SAR); marine PPAR - Passive Phase Array Radar (PESA - Passive electronically scanned array); marine

<table>
<tr><td></td><td colspan="6">AESA – Active Electronically Steered Array (APAR – Active Phased Array Radar).
8. Organization of coastal surveillance and navigation (OMIN), 1 (characteristics and structure; radar surveillance over coastal radar station, geographical characteristics of coast and islands from the aspect of radar surveillance).
9. Relation between tactical requirements and technical characteristics of surveillance radars, 2 (definition of tactical-technical requirements of surveillance radars, range limits by receiver noise only; the resolution ability of target's distance, azimuth and elevation; flexibility-management of radar circuit units).
4. Surveillance radars in Croatian Navy, 9 (GEM, Raytheon Anschutz, Sperry Bridge Master; Enhanced Peregrine - operation characteristics, design - synthetisation, transmitter, TWT amplifier, receiver, signal processor, antenna, type of transmitting- receiving RF signal, remote control).
5. Targeting radars in Croatian Navy, 2 (radar with director SUV 9LV; targeting radar in anti-ship missile RBS 15B)
6. Modern military ship radars, 2 (features and used technical solutions on ships of other naval forces)
Exercise:
1.Radar circuits, 8 (practical work demonstration- transmitter, receiver, antenna system, display),
2.Surveillance and targeting radars on ships in Croatian Navy,4 (operation demonstration)
3. Presentation of detection systems from OSMiO of Croatian Navy, 3</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ field work</td><td colspan="3">☒ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Student attendance is registered and obligatory for lectures and exercises. In order to take the exam and earn ECTS credits, full-time students are required at least 95% of lecture and 100 % of exercises attendance. Doctor’s note is not accepted as justification or replacement for class attendance. If students have not attended classes due to illness or any other justified reason and are missing 20 % of lecture attendance, they can compensate for missing classes through additional tasks or consultations. All other students, i.e. the ones who have less than 50 % of class attendance are not entitled to take the exam and are advised to enrol the course again in the following academic year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework assignment</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>1,9</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>

<table>
<tr>
<td>Grading and evaluating student work in class and at the final exam</td>
<td>
There are two tests.
If students do not pass the mid term tests (min 50% of test score), they may take the oral exam. If students pass both mid term tests, they get the average grade.
For taking the exam and obtaining the course teacher’s signature, it is necessary to have 95 % of lecture attendance and 100 % of exercises.
Continuous evaluation of students' performance:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Lecture attendance and exercises involvement</td><td>95</td><td>30</td></tr>
<tr><td>I TEST</td><td>50</td><td>35</td></tr>
<tr><td>II TEST</td><td>50</td><td>35</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>95</td><td>30</td></tr>
<tr><td>Exam (oral)</td><td>50</td><td>70</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>65-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-89</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>90-100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr>
</table>
</td>
</tr>
<tr>
<td>Required literature (available in the library and via other media)</td>
<td>
<table>
<tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr>
<tr><td>Skolnik, M: Radar Handbook, Third Edition, McGraw-Hill, 3 edition (February 12, 2008)</td><td></td><td>YES</td></tr>
<tr><td>Tait, P: "Introduction to Radar Target Recognition", IEE, 2005.</td><td></td><td>YES</td></tr>
<tr><td>Peebles, P. Z: "Radar Principles", John Wiley & Sons, 1998.</td><td></td><td>YES</td></tr>
</table>
</td>
</tr>
<tr>
<td>Optional literature (at the time of submission of study programme proposal)</td>
<td>Other:
http://fas.org/pub/gen/oelrich/ToomayRadar.pdf
http://www.radartutorial.eu/druck/Book1.pdf</td>
</tr>
</table>

	http://www.phy.davidson.edu/instrumentation/Files/NEETS/Mod18%20-%20Radar%20Principles.pdf http://faculty.nps.edu/jenn/Seminars/RadarFundamentals.pdf http://msi.nga.mil/MSISiteContent/StaticFiles/NAV_PUBS/RNM/310ch1.pdf http://www.rohde-schwarz.com.my/file_18640/1MA207_0e.pdf http://www.globalsecurity.org/military/library/policy/navy/nrtc/14089_ch1.pdf http://www.ofcm.gov/mpar-symposium/2009/presentations/Session02/S23_Robert%20Sexton_MPAR%20Symposium%20Navy%20PAR%20S&T.pdf
Quality assurance methods that ensure the acquisition of exit competences	Student feedback via questionnaires and surveys, student attendance list, faculty classes supervision
Other (as the proposer wishes to add)	-

4.11.7.3 History of Naval Warfare

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">HISTORY OF NAVAL WARFARE</td></tr>
<tr><td>Code</td><td>VPO 127</td><td>Year of study</td><td colspan="4">4th</td></tr>
<tr><td>Course teacher</td><td>Ivan Matijević, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">3</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Zvonimir Forker, M.A.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>15</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">- offer an overview of naval warfare from ancient to modern times
- explain the impact of new technologies on the evolution of the war vessels and their activities through the use of various tactics
- show the differences in combat activities of ships driven by paddles, sails and engines
- highlight the logistical importance of navies in the performance of military operations
- analyze individual naval battles
- evaluate the role of commander</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6"></td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">1. understand the basic principles of development and organization of naval forces in the societies from antiquity to modern times
2. identify the circumstances that led to large naval clashes
3. recognize the effects of certain large naval clashes
4. specify naval battles that were milestones in the historical development
5. specify the factors that led to the fact that one side achieved and maintained naval supremacy
6. learn about the logistical importance of navies in major conflicts
7. learn about the importance of technological and tactical innovations that have led to a preponderance in the conflict
8. notice the role of the commander and functioning the chain of command in the preparation and during the sea battle
9. understand the conditionality of tactics with geographical and meteorological circumstances</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">1. The Navy in the Persian Wars in the 5th century BC. The role and characteristics of the Persian navy in the invasion of Greece in 490 and 480 BC. – example of Xerxes' pontoon bridge on the Hellespont. Athens makes a decision to construct a fleet of triremes. Technical characteristics of the triremes. Greek maneuver diekplous in the Battle of Artemisium. The Greek victory at Salamis 480 BC. Athens' pentecontaetia and complete domination in the Aegean. Dependence of naval forces on land supply points.
2. The Navy in the conquests of Alexander the Great. Persian navy in attempts to destabilize Alexander's hinterland during his conquest of the Middle East. Maritime conflicts during the Macedonian siege, blockade and occupation of Tyre. The importance of the Navy in Alexander's military actions in the valley of the River Indus and the return of his army through the waters of the Persian Gulf.
3. Rome and Carthage fighting for Sicily and the western Mediterranean in the 3rd century BC. The Roman Republic is becoming a maritime power. Carthaginian naval dominance in the western Mediterranean and entry into the conflict with the Roman Republic over control of Sicily. The Roman Senate makes a decision on the construction of the Navy in the first years of the First</td></tr>
</table>

	Punic War (264-241). *Corvus* - innovation in the Roman shipbuilding. Conflicts of navies with a large number of boats and people. The surprising victory of inexperienced Roman Navy over Carthaginian Navy in the battle of 256 BC at Ecnomus - one of the largest naval battles of the ancient world. The Roman Navy transferred the land forces for the war in Africa. The great losses in the storms: eg. Kamarina 255 BC. **4. The Navy in the late Republic and its professionalization in the Roman Empire.** Battle of Actium 31BC. The organization, functioning and tasks of imperial navies stationed in Misenum and Ravenna. Navy stationed in other parts of the Mediterranean and on the large rivers (*Classis Alexandrina*, *Siriaca*, *Moesica*, *Pannonica*, *Pontica*, *Britannica*). The role of the Navy in the Roman occupation of northern Britain during the reign of Septimius Severus (193-211). The Liburnian *serilia* found in hydroarchaeological research alongside Nin. **5. The vital importance of the Navy in the defense of the medieval Byzantine Empire.** *Dromon* as a basic type of war vessel. The introduction of the Latin sail. The use of so-called *Greek fire* in the 7th century as a key mean for rejection of the Muslim navies in the siege of Constantinople. Western Mediterranean becomes a theater of permanent naval conflicts of the Islamic and Christian world. Waning power of the Byzantine navy in the 11th century. **6. The Navy in medieval Croatia.** The eastern coast of the Adriatic under attack of Venetians and Arabs in the 9th century. The early Croatian shipping influenced by ancient traditions: the development in Croatia and the Neretva. Croatian navy in the records of the Byzantine Emperor Constantine Porphyrogenitus in the 10th century. Characteristics of konduras and sagenas and their hydroarcheological discovery alongside Nin. The *Arrow* – the pirate ship in Omiš and Neretva from the 11th century. **7. Vikings. The Navies of ancient and medieval Far East.** *Drakkar* - Viking long boat driven by oars and sails. Performance of the Viking ships and their role in ventures in Greenland and North America, consolidating territory in Scandinavia and surprise attacks in the Mediterranean and continental Europe. Chinese Song Dynasty and the establishment of a permanent navy in the 12th century. Junks and other types of vessels mentioned in historical sources. **8. Ottoman Empire and Venetian Republic as a great naval forces of their time.** The growth of the Ottoman navy in the 14th and 15th centuries and its contribution to the spread of the Empire to the area of the Aegean and the Black Sea. Admiral Hayreddin Barbarosa and establishment of the supremacy of the Ottoman navy in the Mediterranean in the first half of the 16th century. Holy League inflicts heavy defeat to the overwhelming Ottoman navy in the Battle of Lepanto in 1571. Croatian ships in the service of the Venetian Republic. Shipping of Uskoks from Senj and their stratagem on the the island of Iž 1604. Protective-defense flotilla of Dubrovnik Republic in the 16th and 17th centuries. The Navy of Boka Kotorska. **9. The emergence of large sailing ships equipped with heavy cannons.** Historical and tactical importance of failure of the Spanish Armada in the attack on England in 1588. Three English-Dutch War (1652-1674) and a final break with the tactics characteristical for the galleys - time of the line setting sailing ships and maximum firepower of guns. Large liners - example of the English *Sovereign of the Seas* with 100 guns. Standardization of warships into categories. The emergence of frigates intended for reconnaissance and accompanying - example of the American ship *Constitution*. The first battle use of submarines in the American War of Independence (1775-1783). Superior English Navy and Admiral Nelson: The Bay of Abu Qir (1798) and Trafalgar (1805). **10. Time of the steam engine and metal.** The impact of the industrial revolution on the all segments of the construction of war vessels, on their activities and tactics. Improvements in propulsion, armor and weaponry. French cannon of 165 mm in the Crimean War (1853-1856) - enhanced range, precision and destructive power. *Merrimack* and *Monitor* 1862. Ivan Lupis-Vukić and Robert Whitehead - the development of the torpedo factory in Rijeka. The Battle of Vis 1866.

<table>
<tr><td></td><td colspan="6">
11. The end of the 19th and beginning of the 20th century: a big cannon and a torpedo. Lessons from the American-Spanish War (1898) and the Russo-Japanese War (1904-1905). Good cannon allows victory, armor only postpone defeat. Increasing the cannon calibers. Dreadnought: a new class of warships of advanced design and greater mobility. The First World War stopped the development of the German and British big battleships. Japan and the United States with ships of 30,000 tons displacement and cannons with the range of 19 km. Cruisers and destroyers. The development of diesel and electric submarines. Pula - the main naval port of of the Habsburg Monarchy.
12. World War I (1914-1918). The role of navy in the fighting at Gallipoli 1915-1916. The activity of submarines and the emergence of first aircraft carriers. England and Germany in the battle of Jutland in 1916 - the largest naval battle in the war. The Navy of the Habsburg Monarchy and the battle in Otranto 1917. Limiting of naval armaments by agreement in Washington 1922.
13. World War II (1939-1945). The war in the Pacific. Japanese attack on the United States: Pearl Harbor in 1941. The importance of aircraft reconnaissance on the example of the Battle of the Coral Sea (1942). The American victory in the Philippine Sea in 1944 as an example of coordination of air force and naval antiaircraft defense. Battle of Okinawa in 1944. The dominant role of aircraft carriers. The development of naval aviation. Admiral Yamamoto and admiral Nimitz. Heavy battleships Iowa, King George V and Bismarck. War in the Atlantic and Mediterranean. The activity of German submarines. Naval operations in the Adriatic.
14. Cold War (1945-1990). The introduction of nuclear propulsion allows vessels unlimited range and high-speed. The role of large aircraft carrier in the Navy of the United States: Nimitz class. Nuclear submarines armed with intercontinental ballistic missiles: classes Ohio and Typhoon. The activity of the Soviet Union navy. American landing at Inchon (1950). The US Navy during the Vietnam War (1962-1973) and operation Desert Storm (1990-1991). The British navy in the war for the Falklands (1982).
15. The role of naval forces during the Croatian war for independence (1991-1995). The Yugoslav navy blocks all Croatian ports on the Adriatic Sea in 1991. Victories of the Croatian Navy in Split and Korčula channels 1991. The structure and role of the Croatian Navy in military operations for the liberation of Croatian territory during 1993. and 1995.
</td></tr>
<tr><td>Format of instruction</td><td colspan="3">☑lectures
☑seminars and workshops
☑exercises
☐on line in entirety
☐partial e-learning
☐field work</td><td colspan="3">☑independent assignments
☐multimedia
☐laboratory
☐work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Attending lectures, writing essays, taking the exams and the final exam.</td></tr>
<tr><td rowspan="6">Screening student work(name the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0,75</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td>0,75</td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td>1,50</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">The student must achieve the attendance of 90% at lectures and seminars in order to get 25% of the total score. The student must write and present a seminar work successfully in order to achieve 25% of the total score. Having met both criteria the</td></tr>
</table>

	student has the right to attend the final examination. The course is considered as passed if 50% of test items are solved correctlyat the final examination.		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Chester Starr, *The Influence of Sea Power on Ancient History*, Oxford University Press 1989.		YES
	Philip Sabin, Hans van Wees, Michael Whitby (ed.), *The Cambridge history of Greek and Roman warfare, vol. II,Rome from the late Republic to the late Empire*, Cambridge University press 2008.		YES
	Helen Nicholson, *Medieval warfare: theory and practice of war in Europe 300-1500*, Palgrave Macmillan, Basingstoke 2004.		YES
	Jeremy Black (ed.), *War and the world: military power and the fate of continents 1450-2000*, Yale University Press, New Haven 2000.		YES
	Mithad Kozličić, *Hrvatsko brodovlje*, Književni Krug – AGM, Split – Zagreb1993.		YES
Optional literature (at the time of submission of study programme proposal)	Chris Mann (ed.), Great Battles of World War II, Parragon, Melbourne 2008.		
Quality assurance methods that ensure the acquisition of exit competences	The recording student attendance and seminars; evaluating written essays as well as evaluating their oral presentation; taking the final assessment.		
Other (as the proposer wishes to add)			

4.11.7.4 Physical education

NAME OF THE COURSE	**PHYSICAL EDUCATION**					
Code	VPO128	Year of study	4th			
Course teacher	Domagoj Bagarić, M.P.Ed.	Credits (ECTS)	0			
Associate teachers	Ivica Bajaj, M.P.Ed.	Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.					

Course enrolment requirements and entry competencies required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Demonstrate several basic and specific exercises for a certain kinesiological activity. Demonstrate the proper performance of new elements of a certain kinesiological activity. Perform stretching exercises for a certain kinesiological activity. Repeat the given new elements of a certain kinesiological activity in series. Demonstrate strength and flexibility exercises in order to prevent ostomuscular disorders. Integrate motor knowledge and skills for solo workout or a competition.					
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises:** 1. Regular testing of physical abilities 2. The development of functional abilities 3. The development of motor abilities 4. Fitness programs 5. Swimming 6. Naval pentathlon (naval obstacles, navy skills training area) 7. Navy skills training (rowing, sailing)					
Format of instruction:	☐Lectures ☐ Seminars ☒ Exercises ☐ On-line in entirety ☐ Field work		☐ Individual assignments ☐ Multimedia ☐ Lab exercises ☐ Mentoring			
Student responsibilities	Students are required to participate in exercises. Records of student attendance are also kept.					
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Oral exam				(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam						

Required literature (available in the library and via other media		**Number of copies in the library**	**Availability via other media**
Optional literature (at the time of submission of study programme proposal)	J. Šarlija, M. Vrkić: Upute za vježbanje na spravama, Zagreb 2010. Maršić, T. Dizdar, D. Šentija, D.: Osnove treninga izdržljivosti i brzine, Zagreb, 2008.		
Quality assurance methods that ensure	University survey and teaching supervision.		

acquisition of learning outcomes	
Other (as the proposer wishes to add)	

4.11.7.5 Naval Combat Systems I

NAME OF THE COURSE	NAVAL COMBAT SYSTEMS I					
Course Code	VPN121	Year of study	4th			
Course teacher	Dario Matika, Ph.D	Credits (ECTS)	4			
Associate teachers	Jakša Mišković, M.Eng. Darija Jurko, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	15	0
Status of the course	Mandatory for Naval Nautical Studies	Percentage of application of e-learning	Up to 20%			
COURSE DESCRIPTION						
Course objectives	1. Adopt basic and specific knowledge and skills on naval artillery and missiles in the Navy, which are necessary for the successful performance of the initial duties on board the Croatian Navy ships. 2. Master the knowledge on effects and tactics of use of naval weapons systems (artillery and missiles) in the Croatian Navy 3. Train students in planning and performing various tactical tasks independently.					
Course enrolment requirements and entry competences required for the course	/					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Understand the basics of the ballistics and theory of artillery firing. 2. Identify different types of artillery ammunition and fuses and their use in firing at different types of targets, 3. Know the different types of naval guns in the Croatian Navy, and their tactical use. 4. Know the most significant naval gun systems of the modern world's navies. 5. Understand the basic principles of air defence of naval forces. 6. Know the principles of combat use and maintenance of naval missile system RBS-15B. 7. Understand the basic principles of missile defence of the ship.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. The basics of the ballistics and theory of artillery firing. 2. Firing on targets at sea, on land and in the air. 3. Artillery ammunition in the Croatian Navy. 4. Naval guns in the Croatian Navy. 5. Rules of firing of naval artillery. 6. Capabilities of coastal artillery. 7. Most significant naval artillery systems of World's Navies. 8. Anti-air defence of ships and naval forces. 9. Anti-ship missile systems. 10. Basics of aerodynamics and the structureof the naval anti-ship missile RB-15B. 11. Guiding of anti-ship missile RB-15B.					

<table>
<tr><td></td><td colspan="6">12. Missile firing.
13. Tactical use of missile carrier platforms.
14. Missile defence.
Exercises:
1. Naval Artillery Systems in the Croatian Navy.
2. Structure, maintenance and operating the naval missile system RBS-15B.
3. Naval missile system RBS-15B on board Croatian Navy ships.</td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ independent assignments
☒ multimedia
☐ laboratory
☒ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lecture attendance is mandatory (there is a record of attendance), and it is 80% at lectures in order to obtain the course teacher’s signature. If the attendance requirement is not met, student is obliged to sign re-enrol in the course in the next academic year.
There will be a midterm and end of term written exam. For the passing grade, it is needed at least 50% of points on each exam. Students whohave not passed the midterm exam are not allowed to take the end of term exam. Students that have obtained the signature, but have not passed midterm/end of term exams, are obligated to take a final written exam. Students that have enough points to pass the course have to apply for the exam during the first term in order to get their grade signed in, or to have an oral exam if they want a better grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>2,9</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Continuous evaluating of of students' performance
<table>
<tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>80</td><td>10</td></tr>
<tr><td>Midterm exam</td><td>50</td><td>45</td></tr>
<tr><td>End of term exam</td><td>50</td><td>45</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Exam (written and/or oral)</td><td>50</td><td>70</td></tr>
<tr><td>Other activities (including all factors of continuous evaluation)</td><td>50</td><td>30</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
</table></td></tr>
</table>

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above-average achievement with a few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

Same grading criteria are valid for written final exam as for continuous mid-terms exams.

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	1. Donald E. Carlucci, Sidney S. Jacobson: Ballistics- Theory and Design of Guns and Ammunition, Third Edition, CRC Press, 2018.		Yes
	2. Seller (J.) Leather, The Sea-Gunner: Shewing the Practical Part of Gunnery, As it is Used at Sea, etc.,		Yes
	3. Norman Friedman, Naval Institute Guide to World Naval Weapon Systems, Naval Institute Press, 2006.		Yes
	4. Warren J. Boord , John B. Hoffman, Air and Missile Defense Systems Engineering 1st Edition, CRC Press, 2016.		Yes
	5. Ashton Carter, David N. Schwartz, Ballistic Missile Defense, Brookings Institution Press, 1984.		Yes
Optional literature (at the time of submission of study programme proposal)	1. George M. Siouris, Missile guidance and Control Systems, Air Force Institute of Technology, 2004 2. RBS-15B Technical description		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of student's attendance, evidence of professor's attendance, student's questionnaire, Faculty class supervision.		
Other (as the proposer wishes to add)			

4.11.7.6 Passage Planning

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">PASSAGE PLANNING</td></tr>
<tr><td>Code</td><td>VPN122</td><td>Year of study</td><td colspan="3">4th</td></tr>
<tr><td>Course teacher</td><td>Marijan Zujić, M.Sc.
Dario Medić, Ph.D.</td><td>Credits
(ECTS)</td><td colspan="3">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Filip Bojić</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Nautical Studies</td><td>Percentage of application of e-learning</td><td colspan="3">/</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Introduce students to the legal sources of passage planning, elements of passage plan, principles and sequence of analysis of the factors influencing the choice of the fairway and method of navigation, a division of maritime navigation, planning ocean, coastal and port parts of the voyage, the system of routing and controlling navigation in certain areas, VTS services and introduce students to the principles of national and international regulations on watch keeping and explain the principles of watch keeping at sea, anchorage and in port.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">Terrestrial Navigation
Electronic Navigation
Ship Handling Technique</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes))</td><td colspan="5">Describe and explain elements of the passage plan.
Define and interpret the factors that influence the choice of the fairway.
Knowing the factors relevant to the planning of ocean, coastal and port part of the voyage, make a passage plan.
Plan and implement navigation by the systems of routeing in polar regions, areas of shallow waters and near-shore, areas of heavy traffic, on high seas, in war zones, etc.
Identify the VTS and navigation control system.
Confirm the principles and technological conditions of passage optimization.
Describe and interpret the principles of keeping watch at sea, anchorage and in port.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. Deck logbook
2. Watchkeeping at sea
3. Procedures teamwork on the bridge
4. Bridge Team Management
5. Planning of the sea passage. Voyage planning: ocean, coastal and port parts.
6. Using the ship's books and publications
7. Using pilot charts
8 Planning ocean voyage
9. Planning of navigation in coastal areas
10. Navigating in special conditions
11. Planning of navigation in areas of ice
12. Planning of navigation in areas of strong currents
13. The system of marking waterway and fairway (IALA system code)
14. Characteristics of Maritime Navigation
15. Optimization of sea passage. Time management of the ship.

Exercises:</td></tr>
</table>

	1. Deck logbook 2. Procedures teamwork on the bridge 3. Bridge team Management 4. Choice of route 5. Basic principles of Weather Routing 6. Election of ocean routes 7. Making voyage plans 8. Planning passage using ECDIS systems 9. Implementation of the voyage plan 10. Final preparations before the arrival in port / anchoring 11. Auxiliary methods for safe navigation 12. The impact of performance navigation devices on the planning of maritime navigation 13. Planning and implementation of voyage in congested or high traffic areas 14. Plans and realization of voyage in low visibility 15. Planning and implementation navigation in ice: sailing in or near ice.

Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☒ individual assignments ☒multimedia ☐ lab exercises ☐mentoring ☐ (other)

Student responsibilities	Attending lectures and active participation in lectures are compulsory for students, as well as bringing class materials and regular assignment preparation. The students are allowed to miss up to 3 lectures during the semester, either lectures or practical training. Regular class attendance is the condition to gaining the right to the signature. Students who are denied the signature shall enrol the course again in the following academic year.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,5	Research		Practical training	1,5
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Tests	2	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** After passing the practical training midterm exam, the students can attend the oral part of the exam. The students who do not pass the midterm exam/s take the final exam. The midterm exams (parts of the final exam) are taken only during classes and the final (entire) exam in the official exam schedule. If students have not passed all midterm exams (but only some of them), and have obtained the signature, at the final written exam they may take only the midterm exam they have not passed. The recognition of the entire practical training written exam or one of its two main parts without limitations is valid until the end of the academic year, i.e. until the end of the examination period.

For students who take the course again the following academic year, the passed parts of the exam are not recognized.
The allocated time for writing the midterm exam (only during classes) is 1 to 2 school classes.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance of lectures and participation in training	100	25
Continuous assessment of laboratory exercises	75	45
Mid term exam	50	30
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
The theoretical exam (written and/or oral)	50 (100)	90
Past activities (involve continuous assessments)		10
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2017.	1	yes
Passage Planning Practice, Witherbys Publishing Ltd and Seamanship International Limited 2006	1	/
Passage Planning Principles, Witherbys Publishing Ltd and Seamanship International Limited 2006;	1	/
NP231 Admiralty Guide to the Practical Use of ENCs, 2nd Edition 2016;	2	/
CALCULATING WHEEL-OVER POINT, Vladimir N. Drachev , *Asia-Pacific Journal of Marine Science & Education, 2012;*		yes

	D.Jašić, G.Belamarić,A.Gundić, Međunarodna pravila o izbjegavanju pravila na moru (International Rules of the Roads), Sveučilište u Zadru, Pomorski odjel, Zadar,2011.	4	yes
	Methodology for Controlling the Ship's Path during the Turn in Confined Waterways, Srđan Vujičić, Robert Mohović, Ivica Đurđević Tomaš, PFRI 2018;	/	yes
Optional literature (at the time of submission of study programme proposal)	Admiralty.Hanbook…100 A Guide to the Planning and Conduct of Sea Passages, DEPARTMENT OF TRADE, London, 2006. CALCULATING WHEEL-OVER POINT, Vladimir N. Drachev , Asia-Pacific Journal of Marine Science & Education, 2012 Developing a High-Speed Craft Route Monitor window, Odd Sveinung Hareide, Frode Voll Mjelde, Oeystein Glomsvoll, Runar Ostnes, Springer-Verlag Berlin Heidelberg 2011.		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching inspection		
Other (as the proposer wishes to add)			

4.11.7.7 Astronomical Navigation

NAME OF THE COURSE	**ASTRONOMICAL NAVIGATION**						
Code	VPN123	Year of study	4th				
Course teacher	Zvonimir Lušić, Ph.D.	Credits (ECTS)	5				
Associate teachers	Stipe Galić, M.Eng. Tomislav Sunko, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F	
			30	0	26	4	
Status of the course	Mandatory for Naval Nautical Studies	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	Identify the celestial bodies, and use them for determining the position and orientation at sea. Practical use of sextant, chronometer and nautical almanac. Determine the position by observation of celestial bodies in different ways (direct and indirect methods, methods of secant and tangent)						
Course enrolment requirements and entry competencies required for the course	Terrestrial Navigation;Mathematics II						

Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Confirm the basic principle of motion of celestial bodies, their actual and apparent movement. 2. Recognize the major constellations and stars, and make orientation with them. 3. Analyse the celestial sphere, coordinate systems and graphics conversion of coordinates. 4. Practical use of nautical almanac; calculation of local coordinates from Greenwich, time, sunrise and sunset, twilights, meridian passage (upper/lower), latitude (Polaris, merid. passage). 5. Correcting altitude by use of nautical tables. 6. Apply spherical trigonometry to identification of celestial bodies, determining the elements of drawing line of position and compass deviation control. 7. Independently calculate the position, numerically and with the help of special tables (Marc St. Hilaire Method, direct method), fix and running fix. 8. Confirm the principle of chronometer and importance of time in astronomical navigation, recognition and elimination of errors of chronometar. 9. Confirm the principle of sextant, practical use of sextant, and recognition and elimination of his errors. 10. Critically assess the usability of different methods of determining the position in astronomical navigation (Marc St. Hilaire Method, secant method, tangent method, including their errors).
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Notion of astronomical navigation, the spheres and the basic theorems of spherical trigonometry. 2. Coordinate systems. 3. The first and second spherical astronomical triangle-coordinate conversion, special cases of astronomical-nautical spherical triangle. 4. Solar system, celestial bodies used in navigation, real and apparent motion of celestial bodies. 5. Nautical Almanac. 6. Instruments for determining the height, sextant. 7. Correction of the celestial body height. 8. Time in astronomical navigation. 9. Chronometer, errors of chronometer, time signals. 10. Methods for determining positions (both direct and indirect, tangent and secant). 11. Marc St. Hilaire Method, direct (Dozier) method. 12. Special cases in astronomical navigation (φM, Polaris). 13. Identification of the celestial bodies (computing, tables, star finders, star charts). 14. Deviation control of the compass. Use of ABC tables. Use of professional marine software and special tables (Ho 249) for determining position. 15. Position errors in astronomical navigation. **Exercises** 1. Conversion of units. Spherical trigonometry. 2. Celestial spheres, conversion of coordinates. 3. Nautical Almanac, calculation of local coordinates from Greenwich.

<table>
<tr><td></td><td>
4. Correction of the celestial body height: Sun, Moon, planets and stars. Numerical identification of celestial bodies.
5. Time of meridian passage. Sunrise, sunset, nautical/civil twilight.
6. Deviation control of the compass by using celestial bodies.
7. Practical use of sextant: determination and correction of errors, angle measurement.
8. Practical use of sextant. Measurement of the height (stars, Sun), correction of height.
9. Time in navigation; sidereal, synodic. Conversion of time (Greenwich, local, zone). Work with chronometer.
10. Determination of latitude by use of Polaris and bodies at upper/lower transit.
11. Determination of position- Marc St. Hilaire Method and identification of celestial body.
12. Determination of position-running fix (Sun).
13. Determination of position (Dozier) method and identification of celestial body.
14. Determination of position and identification, both numerically and by use of tables.
15. Determination of position and identification by use of special software.
</td></tr>
<tr><td>Format of instruction:</td><td>
☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☒ field work

☐ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring
☐ (other)
</td></tr>
<tr><td>Student responsibilities</td><td>
<table>
<tr><th>Type of activity</th><th>Criterion</th><th>Specific activity</th></tr>
<tr><td>Lecture attendance</td><td>Min 80%</td><td>Presence of students</td></tr>
<tr><td>Exercise attendance</td><td>Min 80%</td><td>Presence of students</td></tr>
<tr><td>Exercise attendance-field work (sextant)</td><td>100%</td><td>Presence of students</td></tr>
<tr><td>Log of exercises</td><td>100%</td><td>Log review</td></tr>
</table>
Lectures and exercises are obligatory; there is a record of attendance. To obtain the course teacher's signature a min 80% of lecture and exercise attendance is required, and 100% for field work (sextant). In case a student fails to acquire minimal hours of attendance, he/she will be denied the signature and accordingly will have no right to apply for the exam.
Absentee notes cannot justify or replace class attendance.
In case of sickness or any other justified reason, students who have more than 80% of attendance, but do not have 100% attendance at field work (sextant), can get extra hours in other, additional terms during semester or later, but not later one month after end of class attendance period.
All other students, i.e. students with below 80% of attendance are denied the signature and shall re-enrol the course again next academic year.
</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each</td><td>
<table>
<tr><td>Class attendance</td><td>1,4</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Field work</td><td>0,1</td></tr>
</table>
</td></tr>
</table>

activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Essay		Seminar paper		(Other)	
	Tests	2,2	Oral exam	1,3	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of full-time students' work

Midterm exams:

I. – exercise, 10th week

II. – exercise, 15th week

III. theory, 14/15th week

After successfully passed midterm exams, i.e. having fulfilled all required obligations, students may attend the exam from theory. Students with all passed midterm exams (I, II and III) are exempt from taking the final exam. Other students need to attend the final exam, the requirement is the lecturer's signature.

Midterm exams (parts of the final exam) are taken during classes, and final exam during examination period at the end of the semester.

The requirement for the 2nd midterm exam is successfully passed 1st midterm exam. Successfully passed midterm exams I and II can replace the final written exam, but not theory. Midterm exam I (without midterm exam II) cannot replace any part of the final exam during examination period.

Final written exam (or both midterm exams I and II) is valid until the end of the semester, the same criteria apply to theory (Midterm exam III).

Maximum time allowed for final written exam-2 school hours

Maximum time allowed for midterm exams-from 1 to 2 school hours

Maximum time allowed for midterm exams, theory- up to 1 school hours

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance of lectures	80	15
Midterm exam I	75	20
Midterm exam II	75	35
Midterm exam III	50	25
Field work	100%	5

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Previous activity (including all elements of the continuous evaluation)	100	10
Written tasks (exercises)	75	60
Theory (written and/or oral)	50	30

Grading scale:

50% is the minimal requirement to pass the exam

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

75% is the minimal requirement to pass the exam

Points (%)	Criterion	Grade
-74	Does not meet minimum criteria	Fail (1)
75-84	Meets minimum criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Richard R. Hobbs.: Marine Navigation-Piloting and Celestial and Electronic Navigation-4th Edition, Naval Institute Press, Annapolis-Maryland, 1998.		/
	Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002.	1	Yes
	A Short Guide to Celestial Navigation, Henning Umland, 2019 https://www.waypointamsterdam.com/Handy_stuf/Short_Guide_To_Astro_navigation.pdf	/	
	Nautical Tables (Nautičke tablice), HHI, Split.	10	
	Nautical Almanach (Nautički godišnjak), 2002		Yes
Optional literature (at the time of submission of study programme proposal)	The Admiralty Manual of Navigation Vol 2: Astro Navigation, 11th edition, 2018. Rodger E. Farley, The Armchair Celestial Navigator, 2002. (http://www.dacust.com/navigation/pdf/ArmchairCelestialNavigator.pdf)		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.7.8 Ship Maintenance

<table>
<tr><th>NAME OF THE COURSE</th><th colspan="6">SHIP MAINTENANCE</th></tr>
<tr><td>Code</td><td>VPS113</td><td>Year of study</td><td colspan="4">4th</td></tr>
<tr><td>Course teacher</td><td>Gorana Jelić Mrčelić, Ph.D.
Luka Mihanović, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">3</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Tomislav Peša, M. Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Engineering Studies</td><td>Percentage of application of e-learning</td><td colspan="4">30%</td></tr>
<tr><th colspan="7">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="6">To give students specific knowledge on ships maintenance and repair.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">1. Define degradation of materials.
2. Define and classify corrosion and protection measures against corrosion.
3. Explain mechanisms of corrosion.
4. Analyse protection measures against corrosion during planning of shipbuilding.
5. Compare advantages and disadvantages of different protection measures against corrosion.
6. Analyse procedures during ship’s inspection and drydocking.
7. Analyse procedures during routine maintenance and repair.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:
1. Definitions of abrasion, erosion and cavitation. Destruction of organic and inorganic non-metallic materials. Climate impacts and influences.
2. Division of corrosion according to mechanisms of corrosion. Division of chemical corrosion: gas, in nonelectrolytes. Kinetics of chemical corrosion.
3. Corrosion due to free energy change, pressure on decomposition, equilibrium constant. Detection of oxides.
4. Special forms of chemical corrosion. Decarbonisation of steel. Hydrogen corrosion. High temperature oxidation of pure metals.
5. Electrochemical corrosion of metals. Electrode potential. Electrodes for measurement.
6. Depolarization: hydrogen, oxygen. Control of corrosion processes. Thermodynamics of corrosive processes.
7. Distribution. Corrosion in sea, land and atmosphere. Corrosion of alloys. Corrosion: general, local, dotted, pitting.
8. Stress corrosion. Corrosion under influence of pressure. Corrosion under vibrations. Mechanical fatigue and corrosion fatigue.
9. Corrosion properties of technical metals. Selection of an optimal material. Iron, steel, stainless steel, copper, brass, ...
10. Corrosion protection. Economic justification of protection. Technological and structural conditions for suitable protection.
11. Pre-treatment of material. Preparation of surface. Mechanical pre-treatment. Chemical and electrochemical surface treatment. Ultra treatment.
12. Protection with metal coating. Alloy coating. Inorganic coatings on metals.</td></tr>
</table>

	13. Protection against corrosion with organic coatings. Selection of an appropriate system. Thickness, application and quality testing of coating. 14. Cathodic and anodic protection. Impressed current cathodic protection. Attenuation curve. Testing of efficiency. 15. Temporary protection. Inhibitors. Corrosion tests. Testing efficiency of protection. Field, plant and laboratory. **Exercises:** 1. Copper gas corrosion 2. Corrosion of zinc in electrolytes 3. Determination of metal potentials in seawater 4. Determination of metal potentials in soil 5. Evans diagram 6. Pre-treatment of material before protection 7. Galvanisation 8. Protection with organic coatings 9. Silica gel absorption capability 10. Testing of cathodic protection efficiency 11. Testing of cathodic protection efficiency in soil 12. Ship's inspection and dry drydocking 13. Maintenance of cargo equipment 14. Maintenance of hatch coamings 15. Maintenance and repairs

Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ individual assignments ☐ multimedia ☐ laboratory ☐ mentoring ☐ (other)
Student responsibilities	Class attendance is mandatory for students, ie the condition for obtaining a signature is attendance at a minimum of 80% of lectures (12 times) and 100% of exercises. In case of insufficient number of attendances, students do not have the right to sign and are required to re-enroll in the course again next year. Students have the opportunity to pass the oral exam by continuous evaluation during the semester by taking a mid term tests. Students are not required to attend the mid term tests. Students who do not pass the mid term tests, but have a signature, are required to take an oral exam within the exam period. Students who take the mid term tests are required to register for the exam via Studomat for the first exam period after the lecture and to come to the registration of the grade or to answer for a higher grade.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1,125	Research		Practical training	
	Experimental work		Report		Homework assignment	1,875
	Essay		Seminar paper		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** Class attendance is mandatory for students, ie the condition for obtaining a signature is attendance at a minimum of 80% of lectures (12 times) and 100%

of exercises. During the semester, two mid term test are taken (7th and 14th week of classes). At the mid term test it is necessary to achieve a minimum of 50% of points. Students who do not take the mid term test for objective reasons or do not achieve the minimum percentage have the opportunity to take a written exam. In the final grade the results of a mid term tests or written exam. Students who do not pass the mid term test during the semester, and have a signature, are required to take an oral exam within the exam period. The same assessment criteria apply to the examination period as to the continuous assessment of knowledge.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance	95	0
Assessment of students work during the course I	50	50
Assessment of students work during the course I	50	50
Total	50	100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written tasks	50	50
Theory (written and/or oral)	50	50

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Jelic Mrcelic: Ship maintenance, e-book		e-book
Dokkum, van, K.: Ship knowledge, DOKMAR, the Netherlands, 2003		e-book
MCA: Code of safe working practices for working seamen, TSO, London, UK, 2009.		e-book
IMO: ISM Code		e-book

Optional literature (at the time of submission of study programme proposal)	Palmer, D.R.: Maintenance Planning and Scheduling Handbook, McGraw Hill, 2013. Schweitzer, P.A.: What every engineer should know about corrosion, Marcel Dekker Inc, New York and Basel, 1987 IACS: Guidelines for Coatings maintenance and repair, Witherbys publishing, London UK, 2005. CBT Seagull: Maintenance and repair (Corrosion protection I and II).
Quality assurance methods that ensure the acquisition of exit competencies	Evidence of students attendance, evidence of professors attendance, students questionnaire
Other (as the proposer wishes to add)	

4.11.7.9 Criminal Law

NAME OF THE COURSE	**CRIMINAL LAW**					
Code	VPO129	Year of study	4th			
Course teacher	Stjepan Gluščić, Ph.D.	Credits (ECTS)	4			
Associate teachers	Lana Milivojević, Ph.D.	Type of instruction (number of hours in a semester)	L	S	E	F
			35	0	15	0
Status of the course	Mandatory for students of the Ministry of the Interior	Percentage of application of e-learning	0			
COURSE DESCRIPTION						
Course objective	Acquiring specialized, applied knowledge from the field of the General and Special Part of the criminal substantive legislation, and basics of criminal procedural law.					
Course enrolment requirements and entry competencies required for the course	/					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	After the course of study students will be competent (they will have knowledge and develop skills): • to define criminal law, criminal offence distinguishing it from other forms of punishable offences, to define sources and explain fundamental principles and institutes of the criminal substantive law from the framework of the General Part of the Criminal Code, they will learn what criminal sanctions are prescribed by the Criminal Code and basic elements of their implementation and will, in general, adopt specialized terminology and meaning of the terms. They will also be informed about the standpoint of the criminal law with regard to juveniles and legal entities as categories of criminal offenders. • to define and explain Chapters of the Special Part of the Criminal Code, to establish the protective object of each Chapter, to recognize and qualify criminal offences with particular emphasis on criminal offences that are the most common in practice.					

	• Students will be informed about judicial practice upon analysis of the court rulings in some cases of the solved criminal offences that are the most common in practice and about some legal understandings in criminal law (formed by the Supreme Court of the Republic of Croatia). This will serve as knowledge which students can later use in their work. • Students will learn basic elements of criminal procedural law, or rather basic elements of the Criminal Procedure Act that processes and sanctions criminal offences. • With active participation in exercises and other forms of teaching methods students will supplement understandings about the subject matter and develop critical thinking with regard to cases that might appear during their work.

Course content broken down in detail by weekly class schedule			
	1.	The concept and historical development of criminal law, sources of criminal law, the purpose of punishment, relation of criminal law with other branches of law	1 hour of lecture
	2.	Spatial, personal and temporal application of criminal law	2 hours of lecture 1 hour of exercise
	3.	CRIMINAL OFFENCE (definition, constitutive elements, time, place, manner of committing criminal offence, stages of committing criminal offence, insignificant offence, voluntary withdrawal, continuing criminal offence, concurrence of criminal offences)	3 hours of lecture 3 hours of exercise
	4.	Reasons for exclusion of unlawfulness, culpability	1 hour of lecture 1 hour of exercise
	5.	Perpetrators of criminal offences, criminal law with regard to juveniles and legal entities	2 hours of lectures
	6.	Accomplices	1 hour of lecture 1 hour of exercise
	7.	Legal sanctions	1 hour of lecture
	8.	SPECIAL PART OF THE CRIMINAL CODE (introduction to special criminal legislation and overview of the Chapters of the Criminal Code)	1 hour of lecture
	9.	Crimes against humanity and human dignity, criminal offences against human rights and fundamental freedoms, criminal offences against personal freedom	2 hours of lectures 1 hour of exercise
	10.	Criminal offences against life and limb and criminal offences against sexual freedom	2 hours of lecture 2 hours of exercises
	11.	Criminal offences against property, criminal offences of forgery, criminal offences against the economy	2 hours of lectures 2 hours of exercises
	12.	Criminal offences against health and criminal offences against the environment	1 hour of lecture 1 hour of exercise
	13.	Criminal offences against general safety and criminal offences against traffic safety	2 hours of lectures 1 hour of exercise
	14.	Criminal offences against official duty, criminal offences against the judiciary, criminal offences against the Republic of Croatia, Criminal offences against a foreign state or international organisation, criminal offences against the Armed Forces of the Republic of Croatia	3 hours of lectures 1 hour of exercise
	15.	Overview of the significant criminal offences from other Chapters of the Special Part of the Criminal Code	3 hours of lectures 1 hour of exercise
	16.	Selected parts of the Criminal Procedure Act	8 hours of lectures

Format of instruction:	☐ **lectures**	☐ **individual assignments**

	☐ seminars ☐ **exercises** ☐*on line* in entirety ☐ field work	☐ multimedia ☐ laboratory ☐ **mentoring**

Student responsibilities	Lectures are compulsory for students and class attendance records are kept. In order to obtain the course teacher's signature students have to attend a minimum 95% of classes and realize exercises during lectures in entirety. In case of insufficient number of attendance, students are not allowed to get a signature and have to enrol in the course again the next academic year. In case when students have sufficient class attendance but do not have enough realized exercises, in order to get a signature, they have to solve an individual assignment/s instead of unrealized exercises (a case of the criminal offence from practice with questions they have to give answers to) and submit it in writing. The exam can be taken at the final exam (written exam/the possibility of oral exam).

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,00	Research		Practical training	
	Experimental work		Report		Self-study and homework assignments (other)	
	Essay		Seminar paper		Exercises	1.50
	Midterm exams		Oral exam		(other)	
	Written exam	1.50	Project		(other)	

Grading and evaluating student work in class and at the final exam

Continuous evaluation of students' performance Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	95	5
Exercises	100	5
Total		10

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Theoretical exam (written and/or oral)	50	90
Previous activities (class attendance)	95	5
Previous activity (exercises)	100	5
Total		100

Grading scale:

Points (%)	Criterion	Grade
0 - 49	Does not meet minimal criteria	Fail (1)
50 – 64	Meets minimal criteria	Sufficient (2)

	65 – 79	Average success with noticeable mistakes	Good (3)
	80 – 89	Above average success with few mistakes	Very good (4)
	90 – 100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	1. Milivojević Lana, Kazneno pravo za kriminaliste, Međunarodno kriminalističko udruženje, Zagreb, 2016.		No
	2. Zakon o kaznenom postupku, Narodne novine, broj: Narodne novine, broj: 152/08, 76/09, 80/11, 121/11, 91/12, 143/12, 56/13, 145/13, 152/14 (odabrani dijelovi)		yes
Optional literature (at the time of submission of study programme proposal)	1. Milivojević Lana, Kazneno pravo za kriminaliste, Međunarodno kriminalističko udruženje, Zagreb, 2013. 2. Horvatić, Ž. I suradnici (2002), Rječnik kaznenog prava, Masmedija, 2002. 3. Kazneni zakon, 125/11, 144/12, 56/15, 61/15 4. Odabrani članci iz posebnog dijela materijalnog kaznenog zakonodavstva 261i z kaznenog procesnog prava		
Quality assurance methods that ensure the acquisition of exit competencies	University questionnaire, student attendance records, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.7.10 State Border Control

NAME OF THE COURSE	STATE BORDER CONTROL					
Code	VPO130	Year of study	4th			
Course teacher	Stjepan Gluščić, Ph.D.	Credits (ECTS)	4			
Associate teachers	Hrvoje Filipović, Ph. D.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	5	0	5
Status of the course	Mandatory for students of the Ministry of the Interior	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objective	The aim of the programme is to provide students with insight into the importance of state border management and to adopt standards in the field of justice, freedom and security implemented by competent ministries and agencies included in integrated border management. Through this course of study students will master standards of the Schengen Borders Code that are implemented in the Foreign Nationals Act, the State Border Control Act, The Police Duties and Powers Act and the International and					

	Temporary Protection Act. After students pass the exam they will be able to independently carry out risk analysis and decide about use of the most important institutes that appear during illegal migrations, cross-border crime and other threats connected with state border protection.
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	To interpret correctly institutes from the Schengen Borders Code, the Act on State Border Control, the Foreign Nationals Act, the International and Temporary Protection Act, the Police Duties and Powers Act. To decide about the use of the most important institutes that appear during illegal migrations, cross-border crime and other threats related to state border protection. To actively participate in integrated border management. To analyse national judicial practice and of the European Court for Human Rights relating to migrations
Course content broken down in detail by weekly class schedule	**Lectures:** 1. Historical development of the EU with special comment on events important for border police. 2. Primary and secondary EU law significant for border police 3. Border checks: the place for carrying out border checks, obligations of subjecting to border checks, border check activities (check of persons, property and vehicles 4. Border checks: visas (air-transit visa, short-stay visa, HVIS); border line and state border surveillance 5. Border surveillance: methods for conducting state border surveillance, powers from the Police Duties and Powers Act, basic elements of reading topographic maps, purpose of control in depth of the border region and state border incidents 6. Border surveillance: purpose of control in depth of the border region and state border incidents **7.** Schengen information system 8. Passenger profiling – particularities of border checks 9. Checking flags, pursuit, stop, seizure and escort of vessels (the Police Duties and Powers Act, the Maritime Code, Convention on the Law of the Sea) 10. International border police cooperation, the role of Frontex in control of the EU external borders, EUROSUR – European Border Surveillance System, NMBIS 11. Border crossings points: types of border crossings: international, local, temporary (purpose, area, marking, movement and stay) 12. Competent ministries and agencies included in integrated border management (Ministry of the Interior – Border Police Directorate; Croatian Ministry of Defence – Coast Guard, Ministry of Finance – Customs Administration, Ministry of the Sea, Transport and Infrastructure – Maritime Safety Directorate, Directorate for Maritime and Inland Navigation, Ministry of Foreign and European Affairs etc.) 13. Foreign nationals: travel documents (concept, competent bodies for issuance, deadlines, complaints), stay of foreign nationals in the Republic of Croatia: short-term, temporary and permanent stay, conditions for employment of foreign nationals (residence and work permit, work registration certificate) 14. Foreign nationals: illegal entry and stay of foreign nationals, accommodation of foreign nationals at the Detention Centre, types of removal 15. International and temporary protection: international legal standards for asylum seekers (Directive 2013/32/EU on common procedures for granting and withdrawing international protection, Directive 2011/95/EU on standards for the qualification of third-country nationals) 16. International and temporary protection: the Dublin Regulation (EU) No 604/2013, EURODAC Regulation No 603/2013, procedures with foreign nationals who at border crossings express their intention to apply for international protection, procedures for granting international protection

	17. Victims of human trafficking: the Council of Europe Convention on Action against Trafficking in Human Beings, Directive on Preventing and Combating Trafficking in Human Beings 18. Victims of human trafficking: Protocol on Identification, Assistance and Protection of Victims of Human Trafficking, Protocol on Trafficking in Human Beings Victims Integration/Reintegration, Protocol on Procedures during Voluntary Return of Victims of Human Trafficking 19. National Strategy on Border Management 20. Infringements of the Convention for the Protection of Human Rights and Fundamental Freedoms (the European Convention on Human Rights) – cases related to foreign nationals 21. Risk analysis:risk management standard process,risk analysis,risk analysis methods and techniques
Format of instruction:	x lectures x seminars x exercises ☐ *on line* in entirety ☐ field work ☐ individual assignments ☐ multimedia ☐ laboratory ☐ mentoring
Student responsibilities	Lectures are obligatory for students and class attendance records are kept. In order to obtain the course teacher's signature, it is compulsory to attend minimum 80% of classes. In case of insufficient class attendance, students are not entitled to get a signature and have to enrol in the course again the next academic year. The exam can be taken through continuous evaluation during the semester such as midterm exams or on the final exam (written and/or oral exam). Students who have not passed midterm exams and obtained the signature, have to take written and/or oral exam within the examination period. Students who gathered sufficient number of points during classes, have to apply for the exam via Studomat (online student portal) for the first examination term and come on the examination date to have their grade entered or to take an oral exam for a better grade.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1,1	Research		Practical training	
	Experimental work		Report		Self-study and homework assignment (other)	
	Essay		Seminar paper		(Other)	
	Midterm exams	2,9	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** Three midterm exams are written during the semester. The first midterm exam that comprises teaching materials from the 1st to the 5th lecture is written in the 6th week of the classes, the second midterm exam that comprises teaching materials from the 6th to the 10th lecture is written in the 11th week of the classes, and the third midterm exam that comprises the teaching materials from the 11th to the 15th lecture is written in the 15th week of the classes. Examples of the questions for the midterm exam are made available to students at the end of each lecture. At each midterm exam it is necessary to achieve a minimum 50% of points to pass the exam. Students who do not take one

midterm exam from objective reasons or do not realize a minimal percentage, are given the opportunity to retake the midterm exam.

Final evaluation comprises the class attendance and activity at lectures and continuous testing of knowledge.

Students who do not pass midterm exams during semester and have obtained the signature, have to take written and/or oral exam within the examination period. The same criteria of evaluation apply to examination period as well as for continuous testing of knowledge.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance at lectures and active participation in exercises	95	10
Continuous testing of knowledge (partial exams/ midterm exams)	50	90

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Theoretical exam (written and/or oral)	50	90
Previous activities (attendance and activity at lectures)	95	10

Grading scale:

Points (%)	Criterion	Grade
0 - 49,9	Does not meet minimal criteria	Fail (1)
50 - 61,9	Meets minimal criteria	Sufficient (2)
62 - 74,9	Average success with noticeable mistakes	Good (3)
75 - 87,9	Above average success with few mistakes	Very good (4)
88 - 100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Regulation (EU) 2016/399 of the European Parliament and of the Council of 9 March 2016 on a Union Code on the Rules Governing the Movement of Persons Across Borders (Schengen Borders Code)		YES
	Filipović, H., Radman, M. (2015).International Legal Standards for Asylum, Croatian Law Review, 6. 57-64.		YES

	Filipović, H., (2020) Illegal Entry of Foreign Nationals as a Criminal Offense or a Misdemeanor, Collected Papers of the Faculty of Law University of Rijeka		Yes
	Filipović, H., Orlić, S. (2016) Use of the Profiling Techniques in Criminalistic with Reference to the Border Control and Suppression of Cross-Border Crime, Criminalistic Theory and Practice		YES
Required literature (available in the library and via other media)	Filipović, (2012) The Implementation of the European Arrest Warrant into the Legal System of Croatia, Police and Security Šegvić, S., Schengen Regime for Administering EU External,Borders, Collected papers of the Law Faculty of the University of Split,Vol. 48 No. 1, 2011 Gluščić, S. (2012) Overview of International Police Cooperation Within the European Union, Police and Security		
Quality assurance methods that ensure acquisition of exit competences	University questionnaire, student attendance records, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.7.11 Marine Power Electronics

NAME OF THE COURSE	**MARINE POWER ELECTRONICS**					
Code	VPE111	Year of study	4 th			
Course teacher	Danko Kezić, Ph.D.	Credits (ECTS)	4			
Associate teachers	Ivan Pavić, Tomislav Peša, M. Eng.	Teaching methods (number of teaching hours per semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	The course deals with the components and basic circuits of the analogue and digital electronics with special focus on the components and circuits of the power electronics such as rectifiers, invertors, DC/DC and AC/AC converters that are used in the vessel's electric power plant. Familiarisation with the procedures of measuring and detecting failures in electronic circuits.					
Course enrolment requirements and entry competencies required for the course	Marine Electro Technology I and II Onboard Electric Power Systems I					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Identify basic electronic components. Present the basic physical principles of semi-conductors. Draw the layouts and compare the operation of various analogue and digital circuits. Present essential principles of electric power conversion.					

	Understand basic operation principles of the AC/DC, DC/AC, DC/DC and AC/AC converters. Identify the disturbances in the network which are produced by the converters and find ways of eliminating them. Draw and explain the layouts of synch-converters and cyclo-converters.	
Course content broken down in detail by weekly class schedule (syllabus)	1. Area of the marine power electronics. Electric power conversion. Structure of the electronic power converter. 2. Passive components (resistors, capacitors, transformers). Active components (power diode), static and dynamic characteristic. 3. Active components: SCR (thyristor), gate turn-off thyristor (GTO), energy bi-polar junction transistor (BJT), 3-terminal fully-controllable switch (JFET). Static and dynamic characteristics and parameters. 4. Active components: MOSFET, IGBT, MCT. Static and dynamic characteristics and parameters. 5. Protection of the components of power electronics, problem of EM disturbances, heat properties of the components. 6. Analogue electronic sets – amplifiers, oscillators, filters. Frequency characteristic and stability. 7. Operation amplifiers – ideal and real amplifier. Basic sets of the operation amplifiers (non-inerting and inverting amplifiers, adders, Miller integrator). 8. The operational principles of the AC/DC, DC/AC, DC/DC and AC/AC converters. Efficiency and power factor of the converter. 9. Rectifiers (AC-DC). Introduction to rectifiers. Development and topology of single-phase and triple-phase rectifying sets. Comparison of the rectifying sets. 10. Network induced converters, autonomous converters. Basic diagrams, wave forms. 11. Introduction to direct-current converters (DC-DC). Descending DC converter. Ascending DC converter. 12. Descending-ascending DC converter. DC converter with galvanic separator. 13. Introduction to AC/AC converters. Operation principle of the alternating-current converter of voltage and frequency. Synchronous converters. Vector control. 14. Cyclo-converters. Matrix converters, application in electric motor drives. 15. Basic measurement techniques and the diagnostics of failures in electronic sets. Introduction to repairing faults in the electronic power sets. Exercises: 1. Basic analogue components. Functional testing of the semi-conducting elements. 2. Basic analogue components. Functional testing of the semi-conducting elements. 3. Basic analogue components. Functional testing of the analogue electronic sets. 4. Basic analogue components. Functional testing of the analogue electronic sets. 5. DC/AC converters. 6. DC/AC converters. 7. AC/DC converters. 8. AC/DC converters. 9. DC/DC converters. 10. DC/DC converters. 11. AC/AC converters. 12. AC/AC converters. 13. Speed regulation of the electric motors. 14. Speed regulation of the electric motors. 15. Uninterrupted power supply.	
Format of instruction:	☒ lectures	☐ individual assignments

<table>
<tr><td></td><td>☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td>☐ multimedia
☒ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="2">Lectures are obligatory for students because records of attendance are kept. To obtain a signature, students must attend a minimum of 80% of the lectures, of which 95% of the lecture hours must be from the material defined by the STCW Convention. In case of insufficient number of attendances, students do not have the right to sign and are required to re-enroll in the course again next year.
Students have the opportunity to pass the oral exam by continuous evaluation during the semester by taking a mid term test. Students who do not pass the mid term, but have a signature, are required to take a written and oral exam within the exam period. Students who pass all mid term test are required to register for the exam via studomat for the first exam period after the lecture and in the exam period to come to the registration of grades or answer for a higher grade.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td colspan="2"><table>
<tr><td>Class attendance</td><td>1.125</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>2,875</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="2">Two midterm tests are held during the semester. The first midterm test comprises theoretical matter included in Lectures 1-7 and is held in the 7th week of the semester. The second comprises theoretical matter included in Lectures 8-15 and takes place in the 15th week. Sample tests are available on the faculty’s web-site. A student has to achieve at least 50% of points to pass a midterm exam. If a student has missed / failed one of the midterm tests, he/she can re-take that test in the 15th week of the semester. The final grade is defined on the basis of student attendance and midterm test results. Students who have obtained the teacher’s signature but have failed or missed the midterm tests have to register for the final written exam in the examination period. The same grading criteria apply for the continuous assessment of student achievements and for the final examination.

Continuous evaluation of students' performance

<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance</td><td>80</td><td>18.75</td></tr>
<tr><td>1st midterm tests</td><td>45</td><td>40.625</td></tr>
<tr><td>2nd midterm tests</td><td>45</td><td>40.625</td></tr>
</table>
Grading scale:
<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0 - 49</td><td>Does not meet minimal criteria</td><td>Fail (1)</td></tr>
<tr><td>50- 64</td><td>Meets minimal criteria</td><td>Sufficient (2)</td></tr>
<tr><td>65 - 79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>78 - 89</td><td>Above average success with few mistakes</td><td>Very good (4)</td></tr>
</table></td></tr>
</table>

	90 - 100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	W. D. Hart: Power Electronics, ISBN: 978-0073380674, Kindle Edition, 2009.		YES
	Mohan, Undeland, Robbins: Power Electronics – Converters, Applications and Design, John Wiley & Sons, inc, 2003.		YES
Optional literature (at the time of submission of study programme proposal)	R.W. Ericson, D, Maksimović: Fundamentals of Power Electronics, Kluwer Academics, 2001.		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.7.12 Marine Engine Systems

NAME OF THE COURSE	MARINE ENGINE SYSTEMS					
Code	VPS114	Year of study	4th			
Course teacher	Ivan Komar, Ph.D.	Credits (ECTS)	6			
Associate teachers	Tino Sumić, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			60	0	30	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Acquiring basic and advanced knowledge about propulsion systems, general service systems, and special systems on board vessels at the operational and management levels. Run and monitor the systems from the engine control room and from local spots, exploitation and measures taken for the marine environment protection.					
Course enrolment requirements and entry competencies required for the course	Marine Engine Elements, Thermo-Dynamics and Heat Transfer.					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Read and create classification layouts of ship's pipelines, 2. Describe the function of the ship's pipelines and instruments for measurement within the pipelines, 3. Distinguish the layouts of the ship's pipelines, 4. Recognise the essential pipelines and alarms for the safety of propulsion, 5. Analyse the interdependence of the measured values and the cause-effect relationships of the values that are indicated by alarms, 6. Prepare the working area for maintaining the marine engine or equipment to ensure the safety of staff at work,					

	7. Promptly respond to the detected malfunctions of the engine systems and take adequate measures, 8. Plan the maintenance of ship's pipelines in order to enable the maximum seaworthiness of the vessel, 9. Safely perform the duties of the engine officer at the operational and management levels.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures and exercises:** 1. Introduction; marine propulsion plants, categorisation of the vessel's engine systems. 2. Pipelines; fundamentals of the properties of fluids, flow losses, calculation of the pipe's diameter, dilatations, materials. Coupled pipes. Valves, check / stop / non-return / safety / alarm valves. Insulation of the pipelines. 3. Cooling system; chemical properties of water, sea suction collector, types of cooling systems (direct and indirect cooling. Designs of indirect cooling (conventional system, cooling of the liners / main engine / main engine pistons / fuel injectors / lubricating oil). 4. Centralised cooling system (system of low-temperature / high-temperature fresh water, sea water system), analysis of flow in the fresh water system. 5. System of oils; lubrication oil for the marine engine plant, systems of lubricating marine diesel engines (circulation of lubricant in the main diesel engine, system of lubricating the main engine cylinders, circulation of lubricant in the auxiliary diesel engines, lubrication of stern-tube bearings, lubrication of other onboard machinery), separation of lubricant, exploitation and maintenance of the lubrication system components; hydraulic systems and their characteristics and elements, hydraulic layouts of the open and closed systems. 6. Fuel system: general information on fuels and their characteristics, physical properties of fuel, fuel treatment (additives, homogenisators); systems of bunkering and transfer of fuel, fuel tanks (fuel storage tanks, settling tanks, service tanks, mixing tank); fuel purification system, homogenisator in fuel purification system; fuel supply control system, viscosity control system, fuel system of auxiliary engines, emergency generator and oil-fired boiler. 7. System of compressed air; compressor, compressed air registers / pipelines / armature / consumers. Air starting system. 8. Feed water system: generating fresh water on board vessels, boiler feed water, 9. General systems onboard vessels: ballasting of tankers, system for automatic trimming, ballasting and deballasting conditions). 10. Bilge system (description of the bilge system, pipelines and armature, collecting and discharging bilge waters from / in various areas, ejector self-suction device, bilge separator). 11. Sanitary system (requirements for quality of the water onboard vessels, system of fresh water generation, fresh water storage tanks, distribution of sanitary water, disinfection procedures, hydrophore, fresh water heaters). 12. System of black and grey water treatment. 13. System for waste burning. 14. Vents, overflow piping, sounding piping. 15. Systems in crude oil tankers; system; inert gas. Crude oil washing of the tanks, drying tank system, cargo heating system. Chemical tankers; inert gas on chemical tankers, nitrogen as inert gas. Liquefied gas carriers; properties of gases and processes of liquefaction and maintaining constant pressure in tanks; handling the cargo when loading / unloading.
Format of instruction:	☒ lectures ☒ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☒ field work ☐ individual assignments ☐ multimedia ☐ lab exercises ☐ mentoring ☐ (other)

<table>
<tr><td>Student responsibilities</td><td>Lecture and exercise attendance, participation in field work.
Attendance is compulsory for students, i.e. a minimum 95% at lectures and 100% at exercises is required for obtaining the course teacher’s signature.
In case of insufficient attendance students are denied the signature and are obliged to enrol in the course again next academic year.
Students have the opportunity to take the oral exam by continuous assessment during the semester and by passing two midterm exams.
Students who do not pass midterm exams and have obtained a signature, are required to take the oral exam within the examination period.
Students who pass the midterm exams are obliged to apply for the exam via Studomat,in the first exam term in order to enter the grade or to retake the test for a better grade.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1.25</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Fiel work</td><td>0.5</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>3.375</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>Assessment and evaluation of students' work:
Upon completion of the lectures and exercises dealing with the given teaching materials, two midterm exams are administered. Midterm exams refer to the theoretical part of the syllabus (as described in the syllabus) and are taken in written form. It is necessary to achieve at least 50% correct answers and explanations to pass a midterm exam. Students who have passed both midterm exams are exempt from taking the written/oral exam. Students who fail one midterm exam will take only that part at the final exam. The passed midterm exam is accepted as a partly passed final exam. Midterm exams andfinal exam may be taken only by students who have met all the requirements (class attendance, exercises and field work).

Continuous evaluation of full-time students' work
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance</td><td>Lectures 95
Exercises 100</td><td>30</td></tr>
<tr><td>Field work</td><td>100</td><td>10</td></tr>
<tr><td>Midterm exam I</td><td>50</td><td>30</td></tr>
<tr><td>Midterm exam II</td><td>50</td><td>30</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Written exam</td><td>50</td><td>30</td></tr>
<tr><td>Oral exam</td><td>50</td><td>30</td></tr>
<tr><td>Continuous evaluation activities</td><td>Lectures 95
Exercises 100
Field work 100</td><td>40</td></tr>
</table>
</td></tr>
</table>

	Total	50	100

Grading scale:

Points (%)	Criterion	Grade
0 - 49	Does not meet minimal criteria	Fail (1)
50- 64	Meets minimal criteria	Sufficient (2)
65 - 79	Average success with noticeable mistakes	Good (3)
78 - 89	Above average success with few mistakes	Very good (4)
90 - 100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	H. D. McGeorge: „ Marine Auxiliary Machinery, 7th Edition“, Paperback ISBN: 9780750643986, eBook ISBN: 9780080511030, Butterworth-Heinemann, 1998.		YES
	J. B.Lheywood: „Internal combustion engine fundamentals“, ISBN-13: 978-1260116106, ISBN-10: 9781260116106, McGraw-Hill, Inc. 2006		YES
	H. D. McGeorge: „ Marine Auxiliary Machinery, 7th Edition“, Paperback ISBN: 9780750643986, eBook ISBN: 9780080511030, Butterworth-Heinemann, 1998.		YES
Optional literature (at the time of submission of study programme proposal)	R. L. Sanks: „Pumping Station Design, Second Edition“, ISBN: 1-7506-9483-1, Butterworth-Heinemann, 1998.		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty.		
Other (as the proposer wishes to add)			

4.11.7.13 Marine Hydraulics and Pneumatics

NAME OF THE COURSE	**MARINE HYDRAULICS AND PNEUMATICS**					
Code	VPS115	Year of study	4th			
Course teacher	Đorđe Dobrota, Ph.D.	Credits (ECTS)	4			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory for Naval Engineering Studies	Percentage of application of e-learning				
COURSE DESCRIPTION						

Course objectives	Learn the basic physical properties and technical requirements that the working media have to fulfil in hydraulic and pneumatic operation. Distinguish operation characteristics and construction designs of hydraulic pumps, air compressor, hydraulic and pneumatic actuating and control elements (valves). Develop logic approach when analysing and solving practical engineering problems related to handling on-board hydraulic and pneumatic systems.
Course enrolment requirements and entry competencies required for the course	Engineering Mechanics II
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Student will: 1. Distinguish basic physical properties and technical requirements that the working media have to fulfil in hydraulic and pneumatic operation. 2. Analyse and distinguish the elements of hydraulic and pneumatic systems according to their design and application, and draw their symbols. 3. Analyse and interpret hydraulic and pneumatic control schemes. 4. Independently formulate and drew examples of hydraulic and pneumatic control schemes. 5. Identify failures and apply the acquired skills for removing failures and malfunction in on-board hydraulic and pneumatic systems.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures**: 1. Introduction. Basic notions of hydrostatics and hydrodynamics. Basic designs of hydraulic systems. Structure, elements and layout of hydraulic systems. 2. Hydraulic liquids. Basic physical properties of hydraulic working fluids: viscosity, density, compressibility, heat expansion. Chemical properties that hydraulic working liquids require. Cavitation and hydraulic impact. 3. Elements of the hydraulic system, Categorisation, operational parameters and technical characteristics of hydraulic pumps. 4. Pressure, flow and power regulators of the variable displacement hydraulic pumps. 5. Hydraulic actuators. Translation actuators. Single-acting, double-acting and telescopic cylinders. Rotary actuators: gear, vane, axial and radial piston motors. 6. Hydraulic control elements. Categorisation of control elements and their symbols. Pressure valves. Flow control valves. Check valves. Controlling with pressure and flow control valves. Proportional valves. Servo valves. 7. Directional control valves. Marking and categorisation of directional control valves. Construction of directional control valves (seat and slide types). Principle of operation of directly and indirectly actuated directional control valves. 8. Hydraulic equipment. The oil reservoir. Pipelines and connections. Filters, their function, types and building-in. Coolers. Hydraulic accumulators. 9. Design of hydraulic systems. Categorisation of hydraulic systems according to ways of control. Hydraulic control schemes. Guidelines for designing hydraulic systems. 10. Hydraulic function schemes. Typical hydraulic circuits for power transmission, speed control, pressure control, energy storage, blocking position of cylinders and synchronization of cylinders. 11. Pneumatics. The use of pneumatics and display pneumatic systems. Production and preparation of compressed air. 12. Elements of pneumatic systems. Actuators (cylinders and rotary motors). Control elements (directional, pressure, flow and check valves). 13. Basic pneumatics control schemes for controlling actuators. Logical connection. Sequence control depending on positions of the cylinder. 14. Time-dependent control. Pressure-dependent control. 15. Examples of construction of hydraulic and pneumatic systems on-board. **Exercises:**

	1. Experimental measurement of *Q-p* characteristics of hydraulic pumps and determines the volumetric pumping efficiency hydraulic pump. 2. Experimental measurement of *Q-p* characteristics of the pressure relief valve 3. Hydraulic circuit for speed control. Practical exercise. 4. The hydraulic pressure control circuit. Practical exercise. 5. Hydraulic circuit for blocking the position of the cylinder. Practical exercise. 6. Hydraulic circuit for synchronization work of cylinders. Practical exercise. 7. Hydraulic servo systems. Implementation of hydraulic servo systems to controllable pitch propeller and steering gear. 8. Energy circuit of pneumatic single and double acting cylinder. Practical exercise. 9. Indirect control of single and double acting cylinder. Practical exercise. 10. The implementation of control depending of the way and time Practical exercise. 11. Realization of logical function "OR" in the pneumatic control. Practical exercise. 12. Realization of logical function "AND" in the pneumatic control. Practical exercise. 13. Realization of logical function "NO" in the pneumatic control. Practical exercise. 14. Pressure-dependent control. Practical exercise. 15. Example of pneumatic control system to manoeuvre of two-stroke low-speed marine diesel engine.
Format of instruction:	X lectures ☐ seminars and workshops X exercises ☐ on line entirely ☐mixed e-learning ☐ field lectures ☐ individual assignments ☐ multimedia X laboratory exercises ☐ mentoring
Student responsibilities	Lecture attendance is compulsory meaning that requirement for obtaining the course teacher's signature is a minimum 95% of lecture attendance and 100% of exercise attendance. Students who have 80% of lecture and /or exercises attendance are allowed to attend, if their absence is justified, compensation classes in the form of consultation and/or with seminar papers in order to the required criteria. In case of insufficient number of arrivals to class, students are not eligible for signature and shall enrol in the course again next academic year. Students have the opportunity to pass the exam through continuous evaluation during the semester and by taking two midterm exams. Students are required to take both midterm exams. Students who do not pass midterm exam/s and have obtain a signature, are required to take the written exam in the examination period. Students who have gathered enough points during semester are required to apply for the exam after and to come on the exam date to enter the grade or retake the exam so as to get a better grade.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,125	Research		Practical training	1
	Experimental work		Report		Homework assignments	
	Essay		Seminar paper		(Insert other)	
	Tests	2,875	Oral exam		(Insert other)	
	Written exam		Project		(Insert other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** Class attendance is compulsory for full-time students, which means that the requirement for obtaining the signature is to attend a least 95% of lectures and 100% of the exercises. Regarding written exam, students may be exempt from taking it if they have passed two (2) midterm exams, written during the semester. The first midterm exam includes the first to the sixth week of lectures and it is taken in the 7th week of classes. The second midterm exam includes the seventh to the fourteenth week of lectures and it is taken in the 15th week of classes. Sample questions for students are available on the Web. It is necessary to achieve a minimum 50% of points. Students

who do not take one of midterm exams for objective reasons or do not achieve the minimum percentage of points have the opportunity to take the written exam.
Students who do not pass a midterm exam and have obtained a signature, are required to take the written exam in the examination period.
The final evaluation consists of presence in the classroom, results on the midterm exams / written exam and oral test. The same assessment criteria apply to test dates as well as for continuous assessment.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	min. 95% attendance of lectures, 100% attendance of exercises	28.125
1st midterm test	50%	35.937
2nd midterm test	50%	35.937

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Midterm or written exam	50%	65%
Oral exam	50%	25%
Previous activities (including any indication of continuous assessment)	100%	10%
Total		100%

Grading scale:

Percentage points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Parr, A., Hydraulic and Pneumatics, A technician's and engineer's guide 2nd ed., Butterworth-Heinemann, Oxford, 2002.		YES
Stewart, H.L., Hydraulic and Pneumatic Power for Production, Fourth Edition, Industrial Press Inc., New York, 1976.		YES
Goodwin, A.B., Fluid Power Systems, Theory, worked examples and problems, The Macmillan Press Ltd., London, 1976.		YES

Optional literature (at the time of submission of study programme proposal)	
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)
Other (as the proposer wishes to add)	

4.11.7.14 Automation of Marine Engine Systems

NAME OF THE COURSE	**AUTOMATION OF MARINE ENGINE SYSTEMS**					
Code	VPE112	Year of study	4 th			
Course teacher	Danko Kezić, Ph.D.	Credits (ECTS)	4			
Associate teachers	Petar Matić, Ph.D., Tomislav Peša, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	30	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Acquisition of knowledge necessary for understanding the principle of the automatic control systems operations for ship's engines and machinery. Familiarisation with the operation principle of the controller and the principles of setting automation systems.					
Course enrolment requirements and entry competencies required for the course	Marine electrotechnics I and II Mathematics I and II					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Identify basic components in the automatic control loops. 2. Present basic principles of operation of sensors and actuators in marine engine plant. 3. Draw and distinguish open-loop control systems, systems with disturbance compensation and closed-loop systems. 4. Compare the systems of the first, second and higher orders. 5. Distinguish the characteristics of P, PI and PID controllers. 6. Identify parameters affecting the stability of automatic control systems. 7. Explain the ways of setting the sensors and gauges. 8. Distinguish basic techniques of the controller turning.					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: 1. Fundamentals of process regulation and control. Examples and basic features of the automation systems on board and ashore. Principles of automatic regulation and control. SISO, SIMO, MISO and MIMO systems. Principle of the open control system. 2. Principle of the feedback. Examples of the stabilisation system and servo system. Response of the closed-loop regulation system during changes in the disturbance and reference values. Compensation principle.					

	3. Modelling of the automation system. Laplace's transformation. Inverse Laplace's transformation with examples. Transient weighting and transfer function of the system. Convolution integral. 4. Distribution of the system. Proportional element of the zero, first and second order. Mathematical description. Examples. Integration element of the zero, first and second order. Derivation element of the zero, first and second order. Dead time element. Mathematical description. Examples. Block algebra. Case solving. Definition of the controller. On/Off controller. 5. Block diagram of the controller. Comparator, amplifier, time element. Hydraulic, pneumatic and electric design. P-controller. Proportional amplification. Examples of the mechanical and electric P-controller. Response of the P-controller to the step excitation. Response of a closed-loop system featuring a P-controller to the step excitation. 6. I-controller, D-controller. PI, PD and PID controllers. Integration and derivation amplification and integration and derivation time. Response of the step excitation controller. Response of a closed-loop system. Examples. 7. Stability of the closed-loop automation system. Methods of determining the stability (Bode plot, Niquit method). 8. Tuning of the controller (Ziegler-Nichelson, Cohen-Coon). Cascade regulation – examples on board ships. Discrete-time control systems. Discrete-event control systems. 9. Basic structures of digital control systems. Digital controllers. Programmable logic controllers. Sensors and converters. Input, output and transfer characteristics of sensors. 10. Sensors of temperature (resistors, thermocouples). Pressure gauges. Inductive, capacity and piezo-electric converters. Sensors of force and momentum. Gauges of movement and position. Speed sensing devices. Level and flow gauges. Batteries. Electric actuators – DC and AC motor, step motor. 11. Block diagram of the pneumatic system. Electro-pneumatic and pneumatic-electric converters. Example of computer-aided pneumatic system control. 12. Block diagram of the hydraulic system. Electro-hydraulic and hydraulic-electric converters. Example of computer-aided hydraulic system control. 13. Centralised, distributed and integrated automation. Example of an integrated automation of the steam generating plant and engine cooling and lubricating systems. 14. Ship automation systems of fuel supply, air-conditioning, electric power. 15. Ship automation systems – auto-pilot. Hierarchical distributed system of automatic control. Industrial computer network. Exercises: 1. Defining a mathematical model for simple mechanical translation systems. 2. Defining a mathematical model for simple mechanical rotation systems. 3. Defining a mathematical model for simple electric systems. 4. Defining a mathematical model for simple electro-mechanical systems. 5. Designing a simulation model for the electro-mechanical system by using Matlab software. 6. Rules of block diagram algebra. 7. Defining the transfer function of the open and closed system of automatic control. 8. Defining a mathematical model for a complex system by using the rules of block diagram algebra.

<table>
<tr><td></td><td colspan="6">9. Designing a simulation model for a complex system defined by the block diagram and transfer function.
10. Time response of the automatic control system – analysis of the transition and steady state.
11. Identification of the system through the system's time response.
12. Frequency response of the system – analysis of stability.
13. Frequency response of the system – analysis of stability with the aid of Matlab.
14. Designing and tuning of the controller by manual adjusting of the model simulated in Matlab.
15. Designing and tuning of the controller by Ziegler-Nichols method of the open and closed loop.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ individual assignments
☐ multimedia
☒ lab exercises
☐ mentoring
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures are obligatory for students because records of attendance are kept. To obtain a signature, students must attend a minimum of 80% of the lectures, of which 95% of the lecture hours must be from the material defined by the STCW Convention. In case of insufficient number of attendances, students do not have the right to sign and are required to re-enroll in the course again next year.
Students have the opportunity to pass the oral exam by continuous evaluation during the semester by taking a mid term test. Students who do not pass the mid term, but have a signature, are required to take a written and oral exam within the exam period. Students who pass all mid term test are required to register for the exam via studomat for the first exam period after the lecture and in the exam period to come to the registration of grades or answer for a higher grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,125</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests (midterms)</td><td>2,875</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
Two midterm tests are held during the semester. The first midterm test comprises Lectures 1-7 and the corresponding auditory exercises, and is held in the 7th week of the semester. The second comprises Lectures 8-15 and the corresponding auditory exercises, and is held in the 15th week. Sample tests are available on the faculty's web-site. A student has to achieve at least 50% of points to pass a midterm exam. If a student has missed / failed one of the midterm tests, he/she can re-take that test in the 15th week of the semester. The final grade is defined on the basis of student attendance and midterm test results. Students who have obtained the teacher's signature but have failed or missed the midterm tests have to register for the final written exam in the examination period. The same grading criteria apply for the continuous assessment of student achievements and for the final examination.

Continuous evaluation of students' performance</td></tr>
</table>

	Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
	Attendance	80 (95%)	30
	1st midterm tests	50	35
	2nd midterm tests	50	40.625

Grading scale:

Points (%)	Criterion	Grade
0 - 49	Does not meet minimal criteria	Fail (1)
50- 64	Meets minimal criteria	Sufficient (2)
65 - 79	Average success with noticeable mistakes	Good (3)
78 - 89	Above average success with few mistakes	Very good (4)
90 - 100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	W. Bolton: Instrumentation and control systems; Elsevier, ISBN: 978-0081006139, 2010.		Yes
	D. A. Taylor, Bill: Marine control practice; Butterworth-Heinemann; ISBN: 978-0408013130, 1987		Yes
	R. C Dorf, R. H. Bishop: Modern Control Sysrems, Prentice Hall, 2011.		YES
Optional literature (at the time of submission of study programme proposal)	R. G. Smith Application of automatic machinery and alarm equipment in ships, Institute of marine engineers; ISBN: 0900976152, 1996.		
Quality assurance methods that ensure the acquisition of exit competences	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.8 4th Year, VIII Semester

4.11.8.1 Electronic Warfare

NAME OF THE COURSE	ELECTRONIC WARFARE						
Code	VPN125	Year of study	4th				
Course teacher	Zoran Blažević, D.Sc.	Credits (ECTS)	4				
Associate teachers	Boško Jerončić Grba, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	15	0

Status of the course	Mandatory	Percentage of application of e-learning	20
COURSE DESCRIPTION			
Course objectives	• Describing and increasing the knowledge about electronic warfare (EW) in the maritime surrounding, radio detection principles, attack and defense in radar-IC spectrum. • Considering and investigating the principles of jamming systems, selection-sorting the signal, and the good and bad sides of jamming systems. • Explaining the possibilities and limitations of scouting, detection, jamming and deception, especially systems of autonomously-guided anti-ship missiles from the aspect of EW on the sea, and principles of EW systems coordination with armed systems on board.		
Course enrolment requirements and entry competencies required for the course			
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Students will be able to: 1. Analyze, summarize and explain EW according to NATO division. 2. Analyze, summarize and explain the place and role of EW in NATO through CEC US NAVY and maritime field situation 3. Efficiently use RESM, detection subsystems (devices), depending on tactical situation in lithographic surrounding. 4. Efficiently use dipoles- chaffs and IC- active radar decoys depending on tactical sea situation. 5. Analyze, summarize and explain features, use and effects of EPM (EA) subsystems through basic signal jamming techniques of surveillance and targeting radars. 6. Develop efficiency and independence in command-decision making process while using EW system (device) on board. 7. Actively and independently contribute to the process of command-decision making in the case of need for coordinated use of EW systems (devices) and maritime armed systems on board.		
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. **C4I on sea, 8 hours**(Concept and role of C4I; components of maritime C4I; four-layer KIS network; CEC - Cooperative Engagement Capability; PEOC4I- DDS „Middlewer“; concept, design and distribution of maritime field situation – CVTMIS; ship's C4Ielements; C4I Aegis i ACDS; L - 11,16, 22; C2 - C4 SUV on Croatian Navy ships). 2. **Electronic scouting (EI- elektroničkoizviđanje) at sea, 13 hours** (concept, features and division of EW on sea; evolution of EW on sea; basic features of EI – SIGINT; radar detector types; signal parameters- signal detection, selection and sorting; extraction of receiver features from detected signal; the impact of lithographic surrounding on EI; problems of radar detecting and identification; tendency of ship detector development). 3. **Electronic jamming (EPM (EA) elektroničkoometanje) on sea, 10 hours** (evolution of modern EPMs; basic features of EPM systems; jamming techniques of surveillance-targeting radars; the use of ship’s jammers; positive and negative effects; tendencies of jammers’ development; an example of protection of EO surveillance Croatian Navy systems GEM and Enhanced Peregrine). 4. **EMZ (ED)system of surveillance, targeting and connection- active radar and IC maritime decoys, 14 hours** (EMZ – immunitiy on EI and EO; passive dipole		

<table>
<tr><td></td><td>– chaff; IC decoys; radar active decoys; “soft” ship’s defense from anti-ship projectile; coordination of EW with armed systems on board.

Exercises:
5. SIGINT (COMINT – ELINT), maritime forces, maritime air forces, 8 hours (demonstration of basic radio detection techniques).
6. “Farol-Argo Systems”, “Philax” system, 9LV, 4 hours (basic parameters with demonstration of operation).
7. SEVID, RMPnetwork, 3 hours (presentation with demonstration of operation).</td></tr>
<tr><td>Format of instruction:</td><td>☒lectures
☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ field work

☒ individual assignments
☐ multimedia
☐ lab exercises
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td>Class attendance is obligatory for lectures and exercises and the records are kept. In order to take the exam and earn ECTS credits, full-time students are required to achieve at least 95% of lecture attendance and 100 % of exercise attendance. Absentee notes are not accepted as justification or replacement for class attendance. If students have not attended classes due to illness or any other justified reason and have missed 20 % of class attendance, they are given the opportunity to compensate for the missing classes in a form of additional tasks or consultations. All other students, i.e. the ones who have less than 50 % of class attendance are not entitled to take the exam and shall enrol in the course again the next academic year.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework assignments</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>2,9</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>Two tests are administered.
If a student does not pass both tests (min 50% test score), then he/she takes the oral exam.
If a student has passed all tests, he/she gets the average grade.
In order to take the exam and to obtain the course teacher’s signature, it is necessary to have 95 % of lecture attendance and 100 % of exercises.

Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Lecture attendance and exercises involvement</td><td>95</td><td>30</td></tr>
<tr><td>I TEST</td><td>50</td><td>35</td></tr>
<tr><td>II TEST</td><td>50</td><td>35</td></tr>
</table>
</td></tr>
</table>

	<table><tr><td>Total</td><td></td><td>100</td></tr></table> **Final examination:** <table><tr><th>Elements of evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr><tr><td>Class attendance</td><td>95</td><td>30</td></tr><tr><td>Exam (oral)</td><td>50</td><td>70</td></tr><tr><td>Total</td><td></td><td>100</td></tr></table> **Grading scale:** <table><tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr><tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr><tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr><tr><td>65-79</td><td>Average success with noticeable mistakes</td><td>Good (3)</td></tr><tr><td>80-89</td><td>Above-average success with few mistakes</td><td>Very good (4)</td></tr><tr><td>90-100</td><td>Extraordinary success</td><td>Excellent (5)</td></tr></table>
Required literature (available in the library and via other media)	<table><tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr><tr><td>Fundamentals of Electronic Warfare, Sergei A. Vakin, Lev N. Shustov, Robert H. Dunwell, 1st Edition, Artech House Radar Library, 2001.</td><td></td><td>Yes</td></tr><tr><td>Tactical Electronic Warfare, Craig Benson, Michael Frater, Michael Ryan, Argos Press, January 1, 2007.</td><td></td><td>Yes</td></tr><tr><td>Introduction to Communication Electronic Warfare Systems, Richard Poisel, Artech House Intelligence and Information Operations, 2nd Edition, 2008.</td><td></td><td>Yes</td></tr><tr><td>Information Warfare and Electronic Warfare Systems, Richard A. Poisel, Artech House Electronic Warfare Library, May 2013.</td><td></td><td>Yes</td></tr></table>
Optional literature (at the time of submission of study programme proposal)	http://www.microwaves101.com/encyclopedia/Navy%20handbook/EW_Radar_Handbook.pdf http://www.navair.navy.mil/nawcwd/ewssa/downloads/NAWCWD%20TP%208347.pdf

Quality assurance methods that ensure the acquisition of exit competences	Student feedback via questionnaires and surveys, student attendance list, faculty classes supervision
Other (as the proposer wishes to add)	-

4.11.8.2 Basic Naval Principles and Practices

NAME OF THE COURSE	BASIC PRINCIPLES AND PRACTICES OF NAVY					
Code	VPN126	Year of study	4th year			
Course teacher	Dario Matika, Ph.D	Credits (ECTS)	4			
Associate teachers	Renato Žarković	Type of instruction (number of hours in a semester)	L	S	E	F
			40	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning	20			
COURSE DESCRIPTION						
Course objectives	1. Acquire knowledge of the execution of naval forces basic missions, including survey of Croatian Navy missions as regards protection of the interests of the Republic of Croatia and execution of military operations other than war, 2. Acquire knowledge of types of warships and their purpose and classification, 3. Master basic forms and contents of navies' combat operations, 4. Acquire basic knowledge of navy ships tactical procedures, 5. Acquire basic knowledge of planning Croatian Navy missions using nautical charts, 6. Acquire knowledge of declared Croatian Navy capability targets.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Defining and interpreting traditional naval forces capabilities in joint warfare, 2. Applying knowledge of navy ship classifications and their capabilities, 3. Defining and interpreting basic tactical principles in maritime forces planning procedures, 4. Defining, interpreting and analyzing different roles of maritime forces, 5. Applying knowledge and skills of planning Croatian Navy missions using nautical charts, 6. Define, analyze and interpret Croatian Navy Capability targets.					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: 1. Introduction to the Course of Basic principles and practices of navy (2) 2. Navy role and tasks (4) 3. Hierarchy of world navies.(2) 4. Types of naval ships and their purpose and classification. (2) 5. Basic warfare roles of maritime forces.(4) 6. Naval ships protection and survivability. (4) 7. Maritime manoeuvring and tactical procedures (6) 8. Visualizing the Croatian Navy planning process using nautical charts. (4) 9. Naval missions other than war. (6) 10. Croatian Navy capability targets (6) Exercises:					

<table>
<tr><td></td><td colspan="6">1. Procedures of executing particular maritime tasks on board Croatian Flotilla ships. (6)
2. Procedures of executing particular maritime tasks on board Croatian Coast Guard ships. (6)
3. Croatian Navy Headquarters organization and tasks, Croatian Navy Operations Centre organization and tasks. (2)</td></tr>
<tr><td>Format of instructions</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
☐ laboratory
☒ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lecture attendance is mandatory (there is a record of attendance), and it is 80% of lectures in order to get the right of signature. If the attendance requirement is not met, student is obliged to sign in for the class in the next academic year.
There will be two (2) mid-term written exams. For the passing grade, it is needed minimum of 50% of points on each mid-term exam. Students who didn’t pass the first mid-term are not permitted to take the second mid-term exam. Students that have a signature, but didn’t pass mid-terms, are obligated to take a final written exam. Students that have enough points to pass the course have to sign up for the exam during the first term in order to get their grade signed in, or to have an oral exam if they want a higher grade.</td></tr>
<tr><td rowspan="5">Screening student work (enter the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical work</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td></td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>e-learning</td><td></td></tr>
<tr><td>Tests</td><td>2,9</td><td>Oral exam</td><td></td><td></td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td></td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Lectures are obligatory for students (records of attendance are kept). To get a signature, students must attend a minimum of 80% of the lectures. In case of insufficient attendance at classes, students are not entitled to sign and are required to re-enroll the course again the following year. Students have the opportunity to pass the exam by continuous evaluation during the semester by taking a total of 2 written mid term test. At each mid term test, it is necessary to achieve a minimum of 50% of points for passing. Students who do not pass the 1st mid term test cannot access the writing of the 2nd colloquium. Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam. Students who have collected a sufficient number of points during the course, are required to register for the exam for the first exam period after the lecture and in the term of the exam to come to the registration of grades or answer for a higher grade.

Continuous evaluation of students' performance</td></tr>
</table>

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80	10
1st Mid-term exam	50	45
2nd Mid-term exam	50	45

Final examination:

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Exam (written and/or oral)	50	70
Other activities (including all factors of continuous evaluation)	50	30
Total		100

Grading:

Points (%)	Criteria	Grade
0-49	does not fulfil minimal criteria	fail (1)
50-64	fulfils minimal criteria	satisfactory (2)
65-79	Average achievement with noticeable deficiencies	good (3)
80-89	Above average achievement with a few deficiencies	very good (4)
90-100	Exceptional achievement	excellent (5)

Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam within the exam period. The same assessment criteria apply to the examination period as to the continuous assessment of knowledge.

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Allied jont doctrine for conduct operations, AJP-3, 2011.		Yes
	Allied jont maritime operations, AJP-3.1, 2004.		Yes
	NATO Joint military symbology, APP -6 (C), 2011.		Yes
	Allied Maritime Interdiction Operations, ATP 71(D)		Yes
Optional literature (at the time of submission of study programme proposal)			

Quality assurance methods that ensure the acquisition of exit competencies	Evidence of students' attendance, evidence of lecturers' attendance, student questionnaire
Other (as the proposer wishes to add)	

4.11.8.3 Safety Management and Risk in Shipping

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">SAFETY MANAGEMENT AND RISK IN SHIPPING</td></tr>
<tr><td>Code</td><td>VPN127</td><td>Year of study</td><td colspan="3">4th</td></tr>
<tr><td>Course teacher</td><td>Goran Belamarić,Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>5</td><td>10</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The aim of the course is to introduce students to international rules, regulations, and standards recommendations relating to safe handling, stowage, lashing and transport of cargo, characteristics of cargo in maritime transport.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">Safety at Sea</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. Explain and interpret the principles of cargo planning and requirements in transportation of various types of dry, liquid, hazardous, and other types of cargo.
2. Plan the loading / discharging, stowing, lashing various types of cargo.
3. Recognize the dangers with specific types of cargo (dry bulk, containers, liquid, etc.).
4. Confirm safeguards for cargo transportation by sea, particularly hazardous cargo, and procedures in case of leakage, capsizing, falling, failure, etc.
5. Knowledge and use of computer programs applicable to planning and transport of various types of cargo.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lecturers:
1. International Safety Management - ISM
2. Ship Management System -SMS
3. International Ship and Port Facility Security Code - ISPS Code
4. Best Management Practices for Protection against Piracy (BMP4)
5. Risk Assessment
6. Risk Management
7. Introduction to the rules of the Register (Classification Society) , the ship class code, Class documents, harmonized system of survey and certification HSSC.
8. Types of inspection, preparations for the conduct of the examination, inspection ESP program for ships, Sea trial.
9. Survey of hull construction and installation.
10. Inspection of firefighting equipment and life-saving equipment
11. Inspection of equipment for prevention of pollution by oil, sewage water waste, exhaust gases.
12. The role of the ship master in carrying out, organizing, preparation and inspection of equipment and ship systems.
13. The role of the ship master in carrying out, organizing, preparation and inspection of equipment and ship systems.
14. The role of chief engineer in the preparation and inspection of ship’s equipment and systems</td></tr>
</table>

	15. Inspection in accordance with the requirements of Port State Control, Flag State Control and Vetting Inspection, USCG Port State Control. **Exercises:** 1. Preparation of documents for a review of the ship and risk assessment. 2. Review and control ship - safety protection during the ship's stay in port and at anchor, practical exercises on board 3. The checks and controls of the ship - Overview of the machine and the machine equipment, practical exercises on board 4. review and control of the ship - Review of firefighting equipment, practical exercises on board 5. Review and control ship - Review of firefighting equipment, practical exercises on board 6. Views and control ship - Review of firefighting equipment, practical exercises on board 7. Risk assesment and implementation of the internal control of the company (Internal Audits) and external control (External Audits).

Format of instruction:	☒**lectures** ☐ seminars and workshops ☒**exercises** ☐*on line* in entirety ☐ partial e-learning ☐ field work	☒**individual assignments** ☒**multimedia** ☐ lab exercises ☐ mentoring ☒**simulator practice**
Student responsibilities	Lectures and exercises (practical training) are compulsory for students and records of class attendance shall be kept. To get the signature students must attend the compulsory minimum 80% of instructions (lectures and exercises) and 100% (95%) on the set, which includes thetraining. In case of insufficient class attendance students shall neither be given a signature nor the right to take the exam. Absentee notes cannot justify or replace class attendance. Students who due to illness or other good reasons do not meet the requirements for signature and have more than of 80% of attendance, will be able to rest up to 100% (95%) do in the additional terms, during semester and after, but not later than one month after the end of the classes. All other students, i.e. those who have achieved less than 80% of class attendance are not eligible for signature and shall enrol in the course again next year.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1.125	Research		Practical training	0,875
	Experimental work		Report		Homework assignments	
	Essay		Seminar essay		(Other)	
	Tests	1,0	Oral exam	1,0	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** After passing the written exam of practical training, students can take the oral exam. Students who have passed the midterm exams during lectures are exempt from taking the oral exam. Students who have not passed the midterm exams have to take the final exam

that consists of two parts.
The first part refers to the specified resolution of the problem of stability and load on the ship's construction, equipment for cargo handling and securing of cargo, determining the amount of load draft of the ship. The second part refers to the theoretical part and work on the simulator for cargo handling. In order to apply for the final exam, students need to obtain the course teacher's signature. Midterm exams shall be held exclusively during classes, and the final exam within the official examination period.
If a student does not pass all midterm exams relating to practical training (but only some) and obtains the course teacher's signature, may be credited with work on the simulator applications (as a whole), and given the other two tests with exercises. In this case, the final written exam comprises only the unit that a student has not passed, as well as the assessment of the operation on simulator applications (first or secondunit).
Midterm exams I and II relating to practical training can be substituted by appropriate individual assignments only during the semester. It does not apply to work on the simulator for cargo handling. Individual units are considered as passed only in the course of the current academic year, i.e. until the end of scheduled examination periods. If students re-enrol in the course next academic year these units shall not be accepted as passed.
This rule may be exempt if a student has passed the written exam of practical training in entirety, than he/she may be given the opportunity to take the oral exam within one year.
Allocated time for practical training written exam is 3 class periods.
Allocated time for midterm exam of exercises is 2 class periods.
Allocated time for theoretical midterm exam is 2 class periods.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance of lectures and participation in training	75	30
Continuous assessment of laboratory practice	75	30
Continuous lectures verification	75	25
Continuous assignment of term papers	75	15
Total		100

Final examination:

Elements of evaluation Elements	Achievement (min.%)	Portion of the final grade (%)
Theoretical exam (written and/or oral)	50	30
Numerical tasks-written	50	35
Demonstration work on simulator	90	25
Homework assignments	75	10

	Online CBT training and testing		
	Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

***On-line CBT training and testing
***Minimum for pass 75%

Points (%)	Criterion	Grade
0-74	Does not meet minimum criteria	Fail (1)
75-84	Meets minimum criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with few mistakes	Very good (4)
95-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Rules for technical supervision of ships-Croatian Register of Shipping (CRS), Split, 2012.		YES
	IMO: ISM Code, Edition 2010.		YES
	Law on Safety at Work RH (NN br. 59/96, 94/96 and 114/03 – consolidated text).		YES
	Vulić, N.: Quality Management Systems, University of Applied Sciences in Split, Split, 2001.		YES
	The International Ship and Port Facility Security Code (IMO's 2012 edition)		YES
	Best Management Practices for Protection against Somalia Based Piracy (BMP4). Version 4 – August 2011		YES
Optional literature (at the time of submission of study programme proposal)	ISBN (International Naval Surveys Bureau): Guide for Risk Assessment, 2010.		
Quality assurance methods that ensure the acquisition of exit competences	University survey, list of student attendance, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.8.4 Physical Education

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">PHYSICAL EDUCATION</td></tr>
<tr><td>Code</td><td>VPO131</td><td>Year of study</td><td colspan="4">4th</td></tr>
<tr><td>Course teacher</td><td>DomagojBagarić, M.P.Ed.</td><td>Credits (ECTS)</td><td colspan="4">0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ivica Bajaj, M.P.Ed.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one’s health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Demonstrate several basic and specific exercises for a certain kinesiological activity.
Demonstrate the proper performance of new elements of a certain kinesiological activity.
Perform stretching exercises for a certain kinesiological activity.
Repeat the given new elements of a certain kinesiological activity in series.
Demonstrate strength and flexibility exercises in order to prevent ostomuscular disorders.
Integrate motor knowledge and skills for solo workout or a competition.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Exercises:
1. Regular testing of physical abilities
2. The development of functional abilities
3. The development of motor abilities
4. Fitness programs
5. Swimming
6. Naval pentathlon (naval obstacles, navy skills training area)
7. Navy skills training (rowing, sailing)</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☐Lectures
☐ Seminars
☒ Exercises
☐ On-line in entirety
☐ Field work</td><td colspan="3">☐ Individual assignments
☐ Multimedia
☐ Lab exercises
☐ Mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Students are required to participate in exercises. Records of student attendance are also kept.</td></tr>
</table>

<table>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td></td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td></td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
During the academic year, students are required to take two regular physical fitness tests to meet the established norms.</td></tr>
<tr><td rowspan="2">Required literature (available in the library and via other media)</td><td colspan="3">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="3"></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">J. Šarlija, M. Vrkić: Upute za vježbanje na spravama, Zagreb 2010.
Maršić, T. Dizdar, D. Šentija, D.: Osnove treninga izdržljivosti i brzine, Zagreb, 2008.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competencies</td><td colspan="6">University survey and teaching supervision.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

4.11.8.5 On-board Training IV

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">ON-BOARD TRAINING IV</td></tr>
<tr><td>Code</td><td>VPN128</td><td>Year of study</td><td colspan="4">4th year</td></tr>
<tr><td>Course teacher</td><td>Jakša Mišković, M.Eng.
Tino Sumić, M.Eng.</td><td>Credits (ECTS)</td><td colspan="4">2</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>30</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Nautical engineering module</td><td>Percentage of e-learning application</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The main objective of this course for students is to acquire practical knowledge and skills of ship handling in all conditions and gain experience of living and working on board a ship.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Passage Planning, Astronomical Navigation, Safety Management and Risk in Shipping, Tactical Navigation</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">1. Defining and interpreting factors that influence the passage planning.
2. Knowing factors relevant to the planning of ocean, coastal and port part of the voyage, making a passage plan
3. Planning and implementing navigation by routing systems in Traffic Separation Zones, areas of shallow waters and near-shore, areas of heavy traffic, on high seas, in war zones, etc.
4. Confirming principles and technological conditions of passage optimization, identifying International System of Maritime Navigation, VTS and navigation control system, describing and interpreting principles of keeping watch at sea, at anchor and in port.
5. Describing and explaining basic concepts of maritime risks, assessing and analysing the risk and participating in risk management.
6. Familiarization with the role of a ship master and / or chief engineer in the conduct, organization, preparation and inspection of the ship.
7. Constant updating of ship's certificates and other ship’s documents related to safety, inspection and survey of the environment.
8. Conducting survey of ship at sea trials and knowing the basics of hull and equipment inspection, steering gear, cargo handling gear, machinery, manifold, pumps, tanks (closed spaces).
9. Preparing the ship for inspection in accordance with the requirements of the Port State Control, Flag State Control and Vetting Inspection.
10. Knowledge and implementation of safety measures.
11. Describing and interpreting the use of Tactical navigation and Electronic Navigation instruments and devices in naval warfare.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Exercises:
1. Bridge watch keeping procedures at sea, at anchor and in port.
2. Applying International and national rules and regulations on the safety of navigation.
3. Planning of a sea passage including ocean, coastal and port parts using Weather Routing.
4. Planning a passage using ECDIS systems.
5. Determining the ship's position using astronomical navigation.
6. Planning a passage in areas of heavy traffic and in situations of reduced visibility
7. Preparing ship for berthing / anchoring.</td></tr>
</table>

	8. Preparing the ship for inspection and risk assessment in accordance with the requirements of the Port State Control, Flag State Control and Vetting Inspection. 9. Gradual inspection of systems / parts of the ship, role of a ship master and chief engineer in carrying out, organizing, preparation and inspection of equipment and ship systems, keeping and updating the ship's documents. 10. Solving Tactical navigation problems applying Electronic navigation instruments and devices.

Format of instructions	☐ lectures ☐ seminars and workshops ☐ exercises ☐*on line* in entirety ☐ partial e-learning ☒ field work	☐ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Mandatory 100% attendance, log keeping. Students who do not achieve 100% attendance, ie. miss boarding the school ship are required to re-enroll in the course next year. The schedule and program of the pratcite are realized during boarding on a school or some other appropriate ship, within a 24-hour stay on the ship for a minimum of 5 days.	

Screening student work *(enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	0.75	Research		Practical training	1.25
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

The exam is not taken. In order to obtain a signature, it is necessary to complete 100% of the planned voyage on the school ship, actively participate in the exercises, fill in the appropriate log and complete other set tasks. Students who have completed maritime high school and have more than 6 months of navigation as deck or enginee trainees (or officers) in the last five years will be recognized as navigational practices. Evidence is obtained by inspecting the seaman's book, and by reviewing the authorization of the officer of the navigational watch or by reviewing the log kept by the cadet.

Continuous evaluation of the students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	100	50
Demonstration of skills and knowledge	100	50
Total		100

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Bowditch, N.: The American Practical Navigator, National Imagery And Mapping Agency, Maryland, 2002.	1	Yes
C. W. Korburger: Vessel Traffic Systems, Cornell Maritime Press,1986.		Yes
MARISEC: Bridge Procedures Guide, 1998		Yes
Nautical Tables, Nautical Almanach		Yes
Rules for technical supervision of ships-Croatian Register of Shipping (CRS), Split, 2012.		Yes
IMO: ISM Code, Edition 2010.		Yes

	The International Ship and Port Facility Security Code (IMO's 2012 edition)		Yes
Optional literature (at the time of submission of study programme proposal)	ISBN (International Naval Surveys Bureau): Guide for Risk Assessment, 2010.		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students attendance, evidence of professors attendance, students questionnaire		
Other (as the proposer wishes to add)			

4.11.8.6 Naval Combat Systems II

NAME OF THE COURSE	**NAVAL COMBAT SYSTEMS II**						
Code	VPO132	Year of study	4th				
Course teacher	Dario Matika, Ph.D.	Credits (ECTS)	4				
Associate teachers	Jakša Mišković, M.Eng. Darija Jurko, M.Eng.	Type of instruction (number of hours in a semester)	L	S	Ex	FW
			45	0	15	0
Status of the course	Mandatory for Nautical Studies programme	Percentage of application of e-learning	20%			
COURSE DESCRIPTION							
Course objectives	Adopt basic and specialist knowledge and skills on weapons used in Mine Warfare (MW) including mine countermeasures (MCM), as well as Anti-Submarine Warfare (ASW), which are necessary for the successful performance of initial officer duties on board the Croatian Navy ships. Master the basic knowledge on tactics and efficiency of the use of Mine Warfare weapons and Anti-Submarine Warfare Weapons in the Croatian Navy. Train students for independent planning and performing various tactical tasks in the Croatian Navy.						
Course enrolment requirements and entry competences required for the course	/						

Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Understand basic principles of naval mine and mine-countermeasure systems. 2. Understand basic principles of MCM tactics 3. Identify different types of naval mines in the Croatian Navy and their tactical use. 4. Understand basic principles of anti-submarine weapons systems. 5. Understand basic principles of tactical use of submarine.
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Naval mine systems (historical review, and roles of mines in maritime operations; the purpose of sea mines; classification of sea mines). 2. Moored contact mines (basic parts and principles of SAG-2 mine, SAG-1 mine and SAGA-M74 mine). 3. Moored influence mines (basic parts and principles of SAM-M80 mine and MNS-M90 mine). 4. Bottom mines (basic parts and principles of AIM–M70 mine; procedures of laying the bottom mine). 5. Mine warfare (basic principles of mine warfare, active and passive MCM) 6. Contact sweep (basic principles of wire dragged sweepers, towing gear, sweeper types, and sweeper tables). 7. Acoustic sweep (classification of acoustic sweeper, working frequency spectre, producing of sound). 8. Magnetic sweep (power supply for electro-magnetic sweepers, cables, construction, basic parts and principles of PEML-1 and PEML-2 sweeper). 9. MW platforms (basic principles and tactics of minelayers, procedures for mine laying, basic principles and tactics of submarines during mine laying, basic principles and tactics of other platforms capable of laying mines). 10. Efficiency of naval mine (availability, reliability and functionality of naval mines, statistical probability of destroying mine's target). 11. The basics of mine barrage (basic principles of naval mine barrage, offensive and defensive mine barrage, basic and additional mine barrage. naval mine fields, basic elements of naval mine barrage). 12. Naval MCM systems (MCM activities, means and forces for MCM, MCM planning other MCM participants). 13. Minesweepers (basic principles and tactics of minesweeper in MCM, minesweeper manoeuvres and turns). 14. Minehunters (minehunter's mission and the use, requirements for tactical use, systems for underwater search and it's tactical use). 15. Submarines (historical review, submarines in maritime operations, submarines of modern Navies, classification and basic characteristic of submarines: secrecy of operation, speed, diving, autonomy, strategic power). 16. Submarine weapons - missiles and torpedoes (basic principles and tactics of submarine's strategic, tactical and anti-air weapons, basic principles and tactics of anti-ship and anti-submarine torpedoes). 17. Submarine operations (principles of submarine operations, submarine organization and employment, mine laying, ISR operations, special ops). 18. Anti-submarine weapons and platforms (historical review and classification of anti-submarine weapons, basic principles and tactics, modern anti-submarine systems; anti-submarine weapons in the Croatian Navy). 19. Anti-submarine weapons (basic principles and tactics, basic parts, and preparation prior to the use).

	20. Torpedoes (basic principles and tactics, classification, anti-submarine torpedo). **Exercises:** 1. Tactical task (mine barrage scheme, time tables, tables of mine barrier). 2. Tactical task (basic elements of tactical task, mine zones calculation, zone wideness, time calculation, minesweeper schemes, and turning during minesweeping activity).

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Lecture attendance is mandatory (there is a record of attendance kept), and it is 80% of lectures in order to obtain the course teacher's signature. If the attendance requirement is not met, students have to re- enrol in the the course in the following academic year. There will be a midterm and end of term written exam. For a passing grade, students have to achieve at least 50% of points on each exam. Students who have not passed the midterm exam are not allowed to take the end of term exam. Students that have obtained the signature, but have not passed midterm/end of term exam, are obligated to take the final written exam. Students that have enough points to pass the course have to apply for the exam during the first term in order to get their grade signed in, or to have an oral exam if they want a better grade.	

Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1,1	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	2,9	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	Lecture attendance is mandatory (there is a record of attendance), and it is 80% of lectures in order to get the right of signature. If the attendance requirement is not met, students shall enrol in the course in the following academic year. There will be a midterm and end of term written exams. For a passing grade, students have to achieve at least 50% of points on each. Students who have not passed the midterm exam are not allowed to take the end of term exam. Students that have obtained the course teacher's signature, but have not passed midterm/end of term exam are obligated to take the final written exam. Students that have achieved enough points to pass the course have to apply for the exam in the first term in order to get their grade signed in, or to have an oral exam if they want a better grade. **Continuous evaluating of students' performance**

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80	10
Midterm exam	50	45
End of term exam	50	45

Final examination:

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Exam (written and/or oral)	50	70
Other activities (including all factors of continuous evaluation)	50	30
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	does not fulfil minimal criteria	Fail(1)
50-64	fulfils minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable deficiencies	Good (3)
80-89	Above average achievement with a few deficiencies	Very good (4)
90-100	Exceptional achievement	Excellent (5)

Same grading criteria are valid for written final exam as for continuous midterm exams.

Required literature (available in the library and via other media)

Title	**Number of copies in the library**	**Availability via other media**
STANAG 1242 – Naval Mine Warfare Principles – ATP-6(C) Volume I		YES
STANAG 1152 – Allied Anti-submarine Warfare Manual – ATP-28(B)		YES
Morison, S., „Guide to naval mine warfare“, 1995.		YES
Howard S. Levie, „Mine Warfare at Sea“, 1992.		YES

	Department Defense, U. S. Military, U. S. Navy, „Naval Mines in the 21st Century: Can NATO Navies Meet the Challenge?“, 2017.		YES
	Cowie, J. S.: “Mines, minelayers and minelaying”,1951.		YES
	Turner Publishing , „Naval Minewarfare“, 1995.		YES
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students’ attendance, evidence of professors’ attendance, student questionnaire, Faculty class supervision.		
Other (as the proposer wishes to add)			

4.11.8.7 Tactical Navigation

NAME OF THE COURSE	TACTICAL NAVIGATION					
Code	VPN129	Year of study	4th			
Course teacher	Zvonimir Lušić, Ph.D	Credits (ECTS)	5			
Associate teachers	Tomislav Sunko, M.Eng.	Type of instruction (number of hours in a semester)	P	S	V	T
			30	0	30	0
Status of the course	Mandatory for Naval Nautical Studies	Percentage of e-learning application	10%			
COURSE DESCRIPTION						
Course objectives	Qualification training for Navigation Officers on board the Croatian Navy ships and for qualification to stand watch as Officer of the Deck (OOD) and Combat Information Centre Watch Officer (CICWO), for navigation in all weather conditions, graphical/practical solving of problems related to manoeuvrings of ships for the battle tasks, and targeted use of electronic navigation devices. Understanding that the optimal use of weapons depends on a quick and accurate solving of manoeuvring tasks.					
Course enrolment requirements and entry competences required for the course	Terrestrial Navigation Electronic navigation devices (or certificate of competence “to act in the capacity of a radar observer and to exercise radar plotting using an ARPA device on a working level,“)					
Learning outcomes expected at course level (4-10	Determining navigational elements of the own ship in tactical navigation. Determining manoeuvring elements of the own ship in tactical navigation. Determining navigational elements of an unknown ship in tactical navigation.					

learning outcomes)	Determining manoeuvring elements of an unknown ship in tactical navigation. Numerical and graphical solving of tactical navigational tasks using manoeuvring boards. Use of electronic navigation devices in tactical navigation. Developing efficiency of individual and team work on the bridge of a warship.	
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures and exercises:** Basic concepts in tactical navigation, basic units and their conversion. Absolute motion. Relative motion. True motion mode. Relative motion mode. Interception at a given speed. Interception at a minimum speed. Interception in a given course. Interception at a given time. Closest point of approach (CPA). CPA (closest point of approach) to a ship with higher speed. Passing at a maximum distance. Passing in front of the bow at a maximum distance. Change-of-Station with speed. Change-of-Station at the lowest speed. Changing-of-Station with time. Maintaining the position along with a change of course and speed of the command ship (manoeuvre begins simultaneously with turning of the command ship). Maintaining the position along with a change of course and speed of the command ship (manoeuvre starts earlier and ends at the moment of turning of the command ship). Determining the course and speed of another ship. Scouting the given position. Scouting the given position (with the shortest amount of time outside the formation). Scouting in a given time and bearing (return to the same position). Scouting in a given time and bearing (return to another position). Intercept circle (theoretical possibility –manoeuvre of one's own ship starts at the same time when the other boat was spotted). Intercept circle (theoretical possibility –manoeuvre of one's own ship starts after the other boat was spotted). Collision avoidance. Determining the true wind direction. Laying a smoke screen on a stationary object - without wind. Laying a smoke screen on a stationary object - with wind. Laying a smoke screen on a moving object - without wind. Laying a smoke screen on a moving object - with wind. Positioning on the target ship.	
Format of instructions:	☒lectures ☐seminars and workshops ☒exercises ☐*on line* entirely ☐mixed e-learning	☒individual tasks ☐multimedia ☐laboratory ☐mentoring ☐field lectures

<table>
<tr><td>Student responsibilities</td><td>Lecture and exercise attendance is mandatory and the records of attendance are kept. For obtaining thecourse teacher’s signature, students’ minimal attendance at lectures is 95% and at exercises 100%. In case of the insufficient attendance, students will not obtain a signature and will lose the right to take the final exam, and consequently shall enrol this course next year. A note of excuse cannot justify nor replace the class attendance.
Students who on account of illness or any other justified reasons do not comply with the conditions for obtaining the signature and whose attendance at lectures is 80% or more will be able to work off remaining classes to 100% (95%) in additional terms, during the semester and after, but not later than one month after its end.
After each exercise completed (tactical navigation and manoeuvring), students will get homework from covered lessons and for that purpose they will need to keep the log of completed homework exercises.
<table><tr><th>Lecture attendance</th><th>Research</th><th>Practical training</th></tr><tr><td>Attendance at lectures</td><td>Min 95%</td><td>Student present</td></tr><tr><td>Attending at exercise</td><td>100%</td><td>Student present</td></tr><tr><td>Keeping of the log of the exercises (on the tactical navigation manoeuvre diagram)</td><td>100%</td><td>Presenting logs for the purpose of obtaining signature</td></tr><tr><td>Homework</td><td>100%</td><td>Presenting homework for the purpose of obtaining signature</td></tr></table></td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td><table><tr><td>Lecture attendance</td><td>1,75</td><td>Research</td><td></td><td>Practical training</td><td>0,5</td></tr><tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework</td><td>0,5</td></tr><tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr><tr><td>Midterm/End of term exam</td><td>1</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr><tr><td>Written exam</td><td>1,25</td><td>Project</td><td></td><td>(Other)</td><td></td></tr></table></td></tr>
<tr><td>Grading and assessment of students' work in the course of lectures and at final exam</td><td>Assessment and evaluation of full-time students' work
There will be a midterm and end of term exam – work on a tactical navigation manoeuvre diagram lasting for 1 to 2 class periods (there will be a time limit – one minute will be given for each requested information). Requirement for taking the Tactical Navigation midterm exam is a passing grade on homework exercises after each graphic solving of Tactical Navigation problems.
Students who pass the midterm and end of term exams and perform successfully all other required obligations will be released from taking the final written exam. Students who have not passed the midterm/end of term exams and have obtained the signature will take the final written exam.
The midterm/end of term exams will be conducted during the lectures, whereas the final exam will be conducted during the official examination period.
If students fail the midterm or end of term exam, and have been entitled to the signature, parts of these exams can be accepted as passed.
The students can take the end of term exam only if they have passed the midterm exam.</td></tr>
</table>

If students pass only the midterm exam, they shall not be released from taking the overall written exam of the exercises (practical training). In this case, at the final written exam they can solve tasks from the unit they have not passed. This applies only until the end of current academic year, i.e. until the end of scheduled examination periods. If students re-enrol in the course next academic year these units are not accepted as passed.

Time allocated for the final written exam is 3 school periods.

Time allocated for writing the midterm/end of term exams is 1 to 2 school periods.

Terms for Midterm/ End of term exams:

Midterm exam - during the 7th week of classes

End of term exam - during the 13th week of classes

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance and activity level at exercises	95	30
Midterm exam	50	30
End of term exam	50	30
Elementary concepts and demonstration work on the tactical navigation manoeuvring board	95	10
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance	95	30
Written exam	50	70
Total		100

Grading scale:

The minimum for passing 50%

Points (min.%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail(1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)

80-89	Above average achievement with a few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

The minimum for passing 75%

Points (min.%)	Criterion	Grade
0-74	Does not meet minimal criteria	Fail (1)
75-84	Meets minimal criteria	Sufficient (2)
85-89	Average success with noticeable mistakes	Good (3)
90-94	Above-average success with occasional mistakes	Very good (4)
95-100	Exceptional success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	International Regulations for Preventing Collisions at Sea 1972 (COLREGs), by the International Maritime Organization (IMO)		YES
	"Maneuvering Board Manual chapter 6",National Geospatial-Intelligence Agency		YES
	Swiatek, Chris. "Maneuvering Boards and You", boatswainsmate.net.		YES
	Maneuvering Board, United States Navy Department Hydrographic Office, 1941		YES
	Manual (H.O. No. 217 ed.), Washington, DC: United States Government Printing Office.		YES
	"Maneuvering Board chapter 11" , globalsecurity.org		YES
Optional literature (at the time of submission of study programme proposal)	Peppe, Kevin (Commander, US Navy) (December 1996). "Constant Bearing, Decreasing Range". US Naval Institute Proceedings. 122 (12/1): 126. Logan, Doug. "Collision Course with a Crossing Boat? How to Know". Boats.com. Retrieved 18 August 2017. "Collision Course with a Crossing Boat? How to Know" (PDF). Gulf Coast Sailing School. Retrieved 18 August 2017. Smith, Gregory L. (Captain) (February 2017). "For river pilots, tri-sectoring most effective way to determine collision risk". Professional Mariner (February 2017).		
Quality assurance methods that ensure the acquisition of exit competencies	Evidence of students' attendance, Evidence of professor's attendance, Students survey, Faculty class supervision.		
Other (as the proposer wishes to add)			

4.11.8.8 Automation in Maritime Traffic

<table>
<tr><th colspan="2">NAME OF THE COURSE</th><th colspan="6">AUTOMATION IN MARITIME TRAFFIC</th></tr>
<tr><td>Code</td><td>VPE115</td><td>Year of study</td><td colspan="5">4th</td></tr>
<tr><td>Course teacher</td><td>Joško Šoda, Ph.D.</td><td>Credits (ECTS)</td><td colspan="5">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ivan Pavić,
Ana Masnov, M.Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Nautical Studies</td><td>Percentage of application of e-learning</td><td colspan="5">10</td></tr>
<tr><th colspan="7">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="6">The main aims of the course are learning the basics of automatic control systems with applications in maritime systems. Students will learn the difference between continuous and discrete open-loop and closed-loop control systems and their application in maritime. They will be able to analyze control systems in time-domain and frequency-domain. They will also obtain a basic understanding of used sensors as part of a closed-loop control system.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">Mathematics 2</td></tr>
<tr><td>Learning outcomes expected at the course level (4-10 learning outcomes)</td><td colspan="6">1. Classification of control systems
2. Describe the model of control systems using mathematical modelling of physical systems
3. Estimatethe stability of the control system
4. Draw Bode plot of control system
5. Time-domain analysis of first, second or higher-order linear time-invariant control system
6. Chose appropriate sampling frequency for discrete control systems</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus</td><td colspan="6">Lectures:
1. Introduction. Basic definitions. Types of control systems and application in maritime.
2. Mathematical modelling of control systems. Differential equation. The Laplace transform. Basic properties of the Laplace transform. Important theorems of the Laplace transform. Definition of the transfer function.
3. Mathematical modelling of control systems. Block diagrams of control systems. Block diagram algebra. Modelling of control systems using MATLAB.
4. Mathematical modelling of control systems. Introduction in the state-space analysis. Definition of state-variables. State-transition matrix. State-transition equation. Characteristic equation, eigenvalues, eigenvectors. Controllability and Observability of Linear Systems.
5. Mathematical modelling of physical systems. Modelling of Electrical Networks. Modelling of Mechanical Translation Systems. Modelling of Mechanical Rotation Systems.</td></tr>
</table>

	6. Time-Domain analysis of control systems. Typical test signals. First-order systems. Second-order systems. Characteristic of first-order and second-order systems. Ships kinematic equations. Nomoto's first order ship's model. 7. Art of approximation. Nomoto's second-order ship's model and characteristics. Beck's ship model. Norbin's ship model. 8. Characteristics of closed-loop linear control systems. Feedback control system characteristics. Error signal analysis. 9. The sensitivity of control systems to parameter variations. Disturbance signals in feedback control systems. The cost of feedback. 10. Control of the transient response. The steady-state error of open-loop control systems. The steady-state error of closed-loop control systems. 11. Controllers in control systems. P, I, PI, PD and PID-controllers. Mathematical modelling and the time-domain response of controllers. 12. Stability of linear control systems. Bounded input-bounded output stability, Hurwitz criterion, Routh's tabulation. Routh-Hurwitz criterion. Introduction to frequency-domain analysis. Frequency response of closed-loop systems. Bode plot. Stability analysis with the Bode plot. Nyquist stability criterion. Using MATLAB in Bode and Nyquist plots and stability estimation. 13. Introduction in discrete-time control systems. Difference equations. Nyquist theorem. Reconstruction of discrete-time signals using Zero Order Holder and First-Order Holder systems. 14. z-Transform and basic properties of z-Transform. Transfer function in discrete-time systems. 15. Examples: Automatic ships steering system and automatic stabilization control system. **Exercises:** 1. Introduction to PLC 2. Hardware support to PLC 3. Software support to PLC (TIA Portal) 4. Software support to PLC (TIA Portal) 5. Basic PLC instruction (NO, NC, Counters, Output, SET, RESET) 6. Basic PLC instructions (TON, TOF, RTON, XScale, RS) 7. Basics of PLC diagrams (AND, OR, XOR, NAND, NOR) 8. Basics of PLC diagrams (Samples of switching processes) 9. Analog sensors and implementation in PLC 10. Analog sensors and implementation in PLC 11. HMI interface and display 12. SINAMICS (Introduction) 13. SINAMICS (Control of asynchronous motor) 14. Integration of PLC, HMI and SINAMICS devices in the system 15. Examples of the real marine systems
Format of instruction:	☒lectures ☒ seminars and workshops ☒exercises ☐ on line entirely ☐mixed e-learning ☐ field lectures ☐ individual assignments ☐ multimedia ☐ **l**aboratory **exercises** ☐ mentoring
Student responsibilities	Lectures and auditory exercises are mandatory for students because records of attendance are kept. To get a signature, students must attend a minimum of 80%

	of lectures and tutorials. In case of insufficient number of attendance at classes, the signing is conditioned by the preparation of seminar assignments from those units in which the student did not attend lectures, and such seminar assignments are evaluated with: passed or failed. Writing seminar papers is allowed only in cases of up to three (3) absences. If a student has missed more than three (3) lectures, then he / she is not entitled to sign, and enrolls in the course again in the next academic year. Students can pass the exam in two ways: by continuous assessment during the semester through two colloquia or after the semester by taking the written and oral part of the exam. Students who do not pass the colloquia during the semester, and have a signature, are required to take a written exam within the exam period. Students individually or in a team must cover the given topics using e-learning material. Students who have collected a sufficient number of points during the class are required to register for the exam via the student exam for the first exam period after the lecture and in the exam period to come to the grade or answer for a higher grade.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Lecture attendance	0.75	Research		Practical training	
	Experimental work		Paper		Homework assignments	0.25
	Essay		Seminar paper		(Insert other)	
	Midterm / End of term exams	3.0	Oral exam		(Insert other)	
	Written exam		Project		(Insert other)	

Grading and evaluating student work in class and at the final exam

Assessment and evaluation of student work

Attendance is mandatory for full-time students, ie the condition for obtaining a signature is attendance at a minimum of 80% of lectures (12 times). 2 mid term tests are written in the semester. The first mid term tests, which includes from 1 to 4 lectures and from 1 to 4 lectures from classroom exercises, is written in the fifth week of classes, and the second mid term tests, which includes from 5 to 10 lectures, is written in the 14th week of classes. Examples of questions for the mid term tests are available to students at the end of each lecture. At each mid term tests, it is necessary to achieve a minimum of 45% of points for passing. Students who do not attend one mid term tests for objective reasons or do not achieve the minimum percentage have the possibility of correction. A correction will be organized for these students in weeks 6 and 15. Students who do not pass 1 mid term tests cannot write 2 mid term tests. Students must work individually or in a team on given topics using e-learning material. The final grade includes class attendance, colloquium results and individual / team assignments.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance and activity level at exercises	80	7.5
Individual asignment	100	2.5
Midterm exam I	45	45

Midterm exam II	45	45
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Regular lecture attendance	80	10
Written exam	45	45
Oral exam	45	45
Total		100

Grading scale:

Points (min.%)	Criterion	Grade
0-45	Does not meet minimal criteria	Fail(1)
45-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above average achievement with a few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Richard C. Dorf., Robert H. Bishop.; Modern Control Systems, 12th Edition., Prentice Hall, 2011.		Yes
	Richard C. Dorf., Robert H. Bishop.; Modern Control Systems, Solution Manual, 12th Edition., Prentice Hall, 2011		Yes
	Tristan Perez; Ship Motion Control, Springer, 2010.,		Yes
	Robert H. Bishop; Modern Control Systems Analysis and Design Using MATLAB, Addison Wesley Publishing Company		Yes
Optional literature (at the time of submission of study programme proposal)	Gene F. Franklin, J. David Powell, Michael Workmanb; Digital Control of Dynamic Systems, 3rd Edition, Adison Wesley Longman, 1998 Benjamin C. Kuo; Automatic Control Systems, 7th Edition, Prentice Hall International Edition, 1995., Thor I. Fossen, Marine Control Systems Guidance, Navigation and Control of Ships, Rigs and Underwater Vehicles, Marine Cybernetics, Trondheim, Norway, 2002. F. EL Hawary: The Ocean Engineering Handbook, CRC Press, 2001.		

Quality assurance methods that ensure the acquisition of exit	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the passing examination rate (Quality Management System in compliance with ISO 9001)
Other (as the proposer wishes to add)	

4.11.8.9 Modern Transport Technology

NAME OF THE COURSE	MODERN TRANSPORT TECHNOLOGY					
Code	VPN130	Year of study	4th			
Course teacher	Rino Bošnjak Ph.D.	Credits (ECTS)	5			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	30	0
Status of the course	Mandatory for Naval Nautical Studies and the Ministry of the Interior	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	The aim of the course is to handle technical - technological and commercial aspects of containerized and Ro-Ro technology at sea, and transportation of bulk and special types of cargo. Students are introduced to the essential elements of the container and Ro-Rotransport, specific technology of bulk, general and special cargo. Also, students learn the specifics of loading / discharging the cargo. In accordance with the requirements and recommendations of the STCW Convention, students will be introduced to international rules, regulations, recommendations and standards relating to technology of the transportation of containers, bulk, general and special cargo.					
Course enrolment requirements and entry competencies required for the course	Cargo Handling II					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Explain and interpret the division and characteristics of container ships, technology and specific characteristics of transport of containers by sea. 2. Define division and characteristics of containers, and the relevant regulations and standards relating to the transport of containers by sea. 3. Define and explain the types of technology of multimodal transport, RO-RO technology, LASH technology, Huck-PACK technology, and other technologies of multimodal transport: SEEBEE craft, BACAT craft, CAPRICORN barge carriers. 4. Define the characteristics and peculiarities of ro-ro transport by sea, and explain the commercial and technical management of container ships and ro-ro ships. 5. Describe and analyze the principles and procedures for loading, discharge, transhipment, stowage, lashing cargo on container ships and ro-ro ships. 6. Explain and interpret the container and ro-ro terminals, and define the possible trends of container and ro-ro technology development. 7. Independently develop the cargo plan for container and ro-ro ship and make calculation of ship's stability and strain on ship structure. 8. Explain and interpret the division and characteristics, technology and specific transport of bulk, dry, dangerous (packaged and bulk) cargo by sea, and the specificity of transport of general cargo. 9. Independently develop a cargo plan for the bulk carrier, and make stability and ship structure strain calculation.					

<table>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="2">Lecturers:
1. The history of containerization in shipping.
2. Loading and stowage of containers on board container ship
3. Container Stowage Plan - BAY PLAN
4. Containerized cargoes. Heavy cargoes (Heavy Weights)
5. Securing, connecting, lashing containers
6. Stowage plan for containers regarding the passage plan
7. Mega container ships and application results in relation to their application
8. Handling with container ship in heavy stormy weather
9. Nature and technology of multimodal transport, ro-ro technology
10. Multi-purpose and ro-ro terminals in the ports - the advantages and disadvantages of ro-ro technology
11. Cargo Lashing equipment against shifting and load calculations force on ro-ro ships.
12. Systems strengthening and binding cargo on wheels and IMO regulations
13. BACAT, CAPRICORN, HUCK-PACK ships, Division of ships for bulk, general and special cargo. Construction.
14. Marine Transhipment means, cargo handling. LASH, SeeBee ships, VLCC, LNG, LPG (IMDG 1 hour). Ships for mixed cargo.
15. Types bulker - Panamax Bulk carrier conteiner, Ore carriers, log carriers, Cement-carriers, Chemical Tankers (IMDG 1)

Exercises:
1. Loading and stacking, lashing containers on container vessels
2. Computer programs for the development of Container Stowage Plan - Macs3 Loading - Stability Programme
3. Plan loading containers Container Stowage Plan - BAY PLAN - Macs3 Loading - Stability program
4. Plan loading containers Container Stowage Plan - BAY PLAN - Macs3 Loading - Stability program
5. Plan loading containers Container Stowage Plan - BAY PLAN - Macs3 Loading - Stability program
6. Secure the containers on deck - Lashing / Cargo Securing by calculation using the Cargo Securing Manual
7. Provision of general cargo on deck - Lashing / Cargo Securing by computation using the Cargo Securing Manual
8. Provision of containers on deck - Lashing / Cargo Securing.uz use Macs3 Loading - Stability Programme
9. Calculation of load capacity of the container ship in service
10. Changing the stability of container, Ro-Ro, LASH, SeeBee ship under the influence of winds due to the exposed surface
11. Cargo Loading Plan on Ro-Ro ships
12. Develop a plan of loading the Ro-Ro ships - Macs3 Loading - Stability program
13. Cargo Loading Plan on ships for bulk and liquid cargo - Macs3 Loading - Stability & Bulk Carriers program
14. Develop a plan of loading on ships for bulk and liquid cargo - Macs3 Loading - Stability & BULK, VLCC, LNG, LPG
15. Develop a plan of loading of general or general cargo - Macs3 Loading - Stability & Bulk Carriers program, Chemical Tankers</td></tr>
<tr><td>Format of instruction:</td><td>☒lectures
☒seminars and workshops
☒exercises
☐on line in entirety
☐ partial e-learning</td><td>☐ individual assignments
☒multimedia
☐ laboratory exercises
☐ mentoring
☒simulator practice</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">☐ field work</td><td></td></tr>
<tr><td>Student responsibilities</td><td colspan="7">Lectures and exercises are compulsory for students and records of class attendance shall be kept.
To get the signature students must attend the compulsory minimum of 80% of instructions (lectures and exercises) and 100% (95%) of the practical training. In case of insufficient number of arrivals to class shall not be given a signature nor the right to take an exam.
Absentee notes cannot justify absence from class.
Students who, due to illness or other justified reasons, do not meet the requirements for signature and have more than 80% of class attendance, will be able to rest up to 100% (95%) in additional terms, during the semester and after but not later one month after the end of classes.
All other students, i.e. those who have achieved less than 80% of class attendance are not eligible for signature and shall re-enrol in the course next academic year.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course))</td><td>Class attendance</td><td>1.0</td><td>Research</td><td></td><td>Practical training</td><td>1,0</td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework assignments</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td>1,0</td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>1,0</td><td>Oral exam</td><td>1,0</td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="7">Assessment and evaluation of full-time students' work
After passing the written exam of exercises (practical training), i.e. assuming all regular requirements met, students can take the oral examination. Students who pass the midterm exams during lectures are exempt from oral exam. Students who do not pass the midterm exam have to take the final exam that consistsoftwoparts.
The first part refers to the specified solution of the problem of stability and load on the ship's construction, equipment for cargo handling and securing of cargo, determining the amount of load draft of the ship. The second part refers to thetheoretical part work on the simulator for cargo handling.
Midterm exams shall be administered exclusively during classes and the final exam within the official examination period.
If a student does not pass midterm exams of practical training and is entitled to the signature, he/she may be credited with the work on the simulator applications (as a whole), and the other two tests with exercises.
In this case, the final written exam comprises only the unit that a student hasnot passed as well as the assessment of the work on the simulator applications (first or secondunit).
Midterm exams I and II relating to practical training can be substituted by appropriate individual assignments only during the semester. It does not apply to work on the simulator for cargo handling.
Individual units are considered as passed only in the course of the current academic year, i.e. until the end of scheduled examination periods. If students re-enrol in the course next academic year these units shall not be accepted as passed.</td></tr>
</table>

This rule may be exempt if a student has passed the written exam of practical training in entirety, than he/she may be given the opportunity to take the oral exam within one year.

Allocated time for practical training written exam is 3 class periods. Allocated time for midterm exam of exercises is 2 class periods. Allocated time for theoretical midterm exam is 2 class periods.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Presence at lectures and participation in training	75	30
Continuous assessment of laboratory practice	75	30
Continuous lectures verification	75	25
Continuous assignment of term papers	75	15
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Theoretical exam (written and/or oral)	50	30
Numerical tasks-written	50	35
Demonstration work on simulator	90	25
Homework assignments Online CBT training and testing	75	10
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

***On-line CBT training and testing
***Minimum for pass 75%

Points (%)	Criterion	Grade
0-74	Does not meet minimum criteria	Fail (1)
75-84	Meets minimum criteria	Sufficient (2)

	85-89	Average success with noticeable mistakes	Good (3)
	90-94	Above-average success with few mistakes	Very good (4)
	95-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	I. C. Clark: The Management of Merchant Ship Stabilitv, Trim & Strength, The Nautical Institute, London, 2002.		Yes
	Capt. J. Isbester ExC FINI, Extra Master, Bulk Carrier Practice, The Nautical Institute, October 1993.		Yes
	GDV - Die Deutchen Veicherer, CONTAINER HANDBOOK, Cargo loss and prevention information from German Marine Insurers, GDV Berlin 2010.		Yes
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competencies	University survey, list of student attendance, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.8.10 Misdemeanour Law

<table>
<tr><th>NAME OF THE COURSE</th><th colspan="5">MISDEMEANOUR LAW</th></tr>
<tr><td>Code</td><td>VPO133</td><td>Year of study</td><td colspan="4">4</td></tr>
<tr><td>Course teacher</td><td>Stjepan Gluščić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>60</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for students of the Ministry of the Interior</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><th colspan="6">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="5">Gaining normative bases and practical knowledge in the field of substantive and procedural legislation, and from a Special Part on misdemeanours against public order, domestic violence and violence at sports events with a selection of misdemeanours from other significant acts that deal with misdemeanours.

After the course of study students will be competent (they will have knowledge and develop skills):
• To define misdemeanour law, misdemeanours and differentiate them from other forms of punishable offences, to define and explain basic principles and institutes of misdemeanour law under the Misdemeanours Act, they will know the legal sanctions prescribed by the Misdemeanours Act and other acts and will, in general, adopt specialized terminology and meaning of the terms they will use in their work.
• To broaden knowledge and gain insight into numerous regulations that prescribe misdemeanours which will provide them with easier and quicker understanding and use in practice.
• They will know how to define and explain regular and summary misdemeanour proceedings, explain the principles and conducting of misdemeanour proceedings, the roles of participants in such proceedings, and in particular the role and procedures of police officers and the Ministry of the Interior as the competent body for initiation of misdemeanour proceedings.
• They will know provisions of the law that prescribes misdemeanours against public order, particularities of domestic violence and violence at sports events, and other important misdemeanours police officers deal with in their work.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">After the exam, a student will be able to
• Identify misdemeanours and distinguish them from other forms of punishable offences, to define misdemeanour law, to explain basic institutes and principles of misdemeanour law, to know legal sanctions prescribed by misdemeanour and other acts
• To compare acts and sub-legal regulations that prescribe misdemeanours
• To differentiate regular and summary proceedings, to explain the principles and conducting of misdemeanour proceedings, the roles of participants in such proceedings, in particular the role and procedures of police officers and the police as the competent body for misdemeanour proceedings</td></tr>
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<table>
<tr><td></td><td colspan="3">

To establish similarities and differences in provisions of law that prescribe misdemeanours that are most common in practice
To develop critical thinking in cases that could result from practice and specialized terminology
To write penalty notices

</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule</td><td colspan="3">
<table>
<tr><td>Concept and sources of misdemeanour law
Concept of misdemeanours and the application of the Misdemeanours Act</td><td>3 hours of lecture</td><td></td></tr>
<tr><td>Offenders, misdemeanour responsibility of legal entities and of juveniles</td><td>3 hours of lecture</td><td></td></tr>
<tr><td>Reasons for exclusion of unlawfulness
Culpability and forms of culpability</td><td>4 hours of lecture</td><td></td></tr>
<tr><td>Stages of committing misdemeanours</td><td>3 hours of lecture</td><td></td></tr>
<tr><td>Accomplices</td><td>2 hours of lecture</td><td></td></tr>
<tr><td>Punishments for misdemeanours
Confiscation of pecuniary gain</td><td>2 hours of lecture</td><td></td></tr>
<tr><td>Legal consequences of conviction, rehabilitation, data from misdemeanour records</td><td>2 hours of lecture</td><td></td></tr>
<tr><td>Misdemeanour proceedings and its principles</td><td>4 hours of lecture</td><td></td></tr>
<tr><td>Participants in the proceedings and concept of the party
Deadlines, pleadings and records, delivery service</td><td>4 hours of lecture</td><td></td></tr>
<tr><td>Measures for ensuring the conducting of proceedings and execution of penalties</td><td>4 hours of lecture</td><td></td></tr>
<tr><td>Inquiries and immediate presentation of evidence
Actions in misdemeanour proceedings</td><td>9 hours of lecture</td><td></td></tr>
<tr><td>Regular misdemeanour proceedings</td><td>4 hours of lecture</td><td></td></tr>
<tr><td>Legal remedies (ordinary and extraordinary)</td><td>3 hours of lecture</td><td></td></tr>
<tr><td>Summary misdemeanour proceedings</td><td>3 hours of lecture</td><td></td></tr>
<tr><td>SELECTED MISDEMEANOURS FROM SPECIAL MISDEMEANOUR LEGISLATION:
The Public Order Misdemeanours Act, The Domestic Violence Protection Act, the Act on the Prevention of Disorder at Sports Events, the Drug Abuse Prevention Act, the Weapons Act, the Excise Duty Act, the Customs Act, the Sea Fisheries Act, the Maritime Code.</td><td>10 hours of lecture</td><td></td></tr>
</table>
</td></tr>
<tr><td>Format of instruction:</td><td>☐ lectures
☐ seminars
☐ exercises
☐on line in entirety
☐ field work</td><td colspan="2">☐individual assignments
☐ multimedia
☐ laboratory
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="3"></td></tr>
</table>

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	5%	Research	15%	Practical training	-
	Experimental work	10%	Report	5%	Independent study and homework (other)	-
	Essay	5%	Seminar paper	10%	(other)	-
	Midterm/ End of term exams	20%	Oral exam		(other)	
	Written exam	50%	Project	20%	(other)	

Grading and evaluating student work in class and at the final exam			
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Veić, P., Gluščić, S.: Prekršajno pravo (opći dio) II izdanje, Narodne novine Zagreb, 2013.		YES
	2. Veić, P. i sur.: Prekršajni zakon (drugo izmijenjeno i dopunjeno izdanje, Dušević i Kršovnik, Rijeka 2013.		YES
	3. Zakonski tekstovi iz posebnog prekršajnog zakonodavstva (odabrani članci).		YES
Optional literature (at the time of submission of study programme proposal)	1. Milivojević Antoliš, L., Gluščić, S., Brnetić, D.: Prekršajno pravo, Zagreb Ministarstvo unutarnjih poslova, 2012. , 2. Tomašević, G., Krapac, D., Gluščić S.: Kazneno procesno pravo: udžbenik za visoke škole, Narodne novine Zagreb 2012. (odabrana poglavlja).		
Quality assurance methods that ensure the acquisition of exit competencies			
Other (as the proposer wishes to add)			

4.11.8.11 Police Powers and Their Application

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">POLICE POWERS AND THEIR APPLICATION</td></tr>
<tr><td>Code</td><td>VPO134</td><td>Year of study</td><td colspan="4">4th</td></tr>
<tr><td>Course teacher</td><td>Željko Mršić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Davor Štrk, M.Sc.
Hrvoje Filipović</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for students of the Ministry of the Interior</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">- to explain the organization of the Ministry of the Interior and General Police Directorate and describe the organization and scope of work of the police directorates and police stations;
- to list requirements for recruitment to the Ministry of the Interior, impediments for employment in the Ministry of the Interior, to differentiate minor and serious dereliction of duty and to list requirements for termination of employment by operation of law;
- to state rules of personal appearance and conduct of police officers on duty and off duty;
- to explain following the orders of a superior officer and to list functional insignia for police officers and to explain conditions for acquiring police ranks;
- to list police duties, to state legal grounds for carrying out police duties and use of police powers and basic principles for carrying out police duties;
- to state conditions for providing assistance and to explain cooperation of the police with other government bodies;
- to state police powers prescribed by the The Police Duties and Powers Act, the Misdemeanours Act and the Criminal Procedure Act;
- to state duties of police officers while using police powers and procedures while wearing official uniforms and plain clothes;
- to explain procedures of police officers while using police powers against children, juveniles and military persons and to state types of immunities and to explain identifications of persons entitled to privileges and immunities;
- to interpret requesting information from citizens as well as checking and establishing identity of persons and objects;
- to explain police power to serve a summons, power of search and to name legal requirements for bringing persons into custody;
- to explain searching for persons and objects;
- to give the example of warnings and orders and to name requirements for requisitioning of vehicles and telecommunications devices;
- to describe difference between visual inspection and search;
- to state requirements for temporary seizure of objects;
- to describe receiving crime reports, submitting crime and other reports and to explain the procedure of the police officer after receiving information that a crime was committed, to state when the police officer has to receive a crime report, to state what is written in a crime report and to explain the procedure when criminal offence will not be prosecuted ex-officio;
- to name requirements for checking phone records and visual inspection of documents, as well as entry and visual inspection of facilities and premises;
- to explain polygraph testing and entry to a private home;
- to state legal conditions for offering rewards to the public and audio and video recording and photographing in public places;</td></tr>
</table>

	- to state principles on use of force; - to explain passive and active resistance, to explain use of physical force, irritating spray and restraints; - to interpret the use of police dogs as a means of force, to state legal requirements for use of tyre deflation devices and to describe the use of water cannons; - to state the use of force against a group and to explain procedures of the police officer in cases of breach of the peace; - to name legal requirements for use of firearms against persons, animals and in pursuit of a vessel and to explain procedures of the police officer after the use of force; - to explain the tactics of procedures during response in cases of breach of the peace in hotel and restaurant facilities and open space;
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. To develop a sense that every use of police powers is *de facto* interfering with human rights and freedoms, and that only consistent compliance with prescribed legal procedures and professional standards makes it legally permissible. 2. To build a standpoint that police powers are "tools" for protection of basic human rights and freedoms as the highest values of democratic societies, and that everything possible has to be done not to turn those powers against those who need to be protected, or rather to prevent abuse of police powers used against basic human rights and freedoms. 3. To compare police powers with police duties and to adopt fundamental principles of mutual relations. 4. To identify hazards resulting from illegal or unprofessional use of police powers as well as disrespect of fundamental principles of their use. 5. To assess whether the right and obligation of the police to act exist, or rather whether legal requirements for the use of certain powers have been met taking into account the existence of reasonable suspicion of danger, or rather that a criminal offence has been committed or it is about to be committed. 6. To integrate ethical standards in the use of police powers. 7. To generate voluntary informed consent to intensified oversight of police officers and duties because of a danger for society due to the abuse of police powers. 8. To build a righteous value system between goals and methods of achieving them, i.e. that the end does not justify the means, but it is necessary to follow professional standards in legally prescribed procedures for the use of police powers. 9. To formulate the existence of legal requirements for the use of each police power and the use of force in particular. 10. To combine acquired theoretical knowledge with practical experience from everyday police practice in order to find the best solutions through that integration.
Course content broken down in detail by weekly class schedule (syllabus)	Mutual relations and communications of police officers Addressing and greeting citizens, subordination, mutual relations of police officers. Identifying oneself and greeting. Addressing higher-ranking and lower-ranking officers. Submitting reports, conduct. The Code of Ethics for Police Officers. Ministry of the Interior, General Police Directorate, Police Administration and Police Station (organisation and scope of work, categories of police administrations and police stations) Police officer Position, role and reputation of the police officer. Ranks of police officers and functional insignia. Uniform and equipment. The Code of Ethics for Police Officers. Employment in the Ministry of the Interior in conformity with the Police Act. Recruitment. Trainees. Rights, obligations and responsibilities out of civil servants' relations. Transfer. Disciplinary procedure. Minor and serious dereliction of duty. Termination of employment. Disciplinary courts. Police duties and general rules for carrying them out

	Orders. Preventive police activities in maintaining public order and combating crime Providing assistance and cooperation with other bodies Cooperation with other bodies. Cooperation with foreign police forces and other international bodies. Preventive police activities – cooperation with citizens Police powers (concept and aim,police powers in conformity with the The Police Duties and Powers Act,the Criminal Procedure Act and the Misdemeanours Act.Generalrules andprinciples on police powers) Official data Classification of data and nominal delivery time (Marking of documents – levels of classified information). Obligation of keeping official secret. Giving warnings and orders to citizens Procedure of the police officer when a person disobeys a warning and an order. Checking and establishing the identity of persons and objects (public documents and stages of checking the person's identity, tactical rules for checking the person's identity in normal, suspicious and dangerous situation (attempt to escape or to attack), Establishing the identity of persons Checking and establishing the identity of objects Checking persons, objects and vehicles Tactics of procedures: Search in conformity with the Criminal Procedure Act Temporary seizure, safekeeping and sale of objects Ways of describing and listing temporary seized objects Procedure with found items Filling out the receipt for seized items Bringing into custody Real and legal obstacles Tactics for bringing into custody, inform persons of their rights, proceeding with and without serving warrants and orders Collecting, assessing, storage, processing and using data Collecting, storage, processing and using data Storage of data and data records Requesting information from citizens Preventive police activities – cooperation with citizens Serving a summons Contents of the summons. Bringing a person into custody who failed to appear in court. Serving a summons to a child and a juvenile, contents of the summons, the methods of serving a summons and delivery of a summons Measures of temporary restriction of freedom of movement and basic elementsof the tactics of police officers' procedures in implementation of measures of temporary restriction of freedom of movement Arrest and detention Writing reports on arrest and reports on taking a person into the police custody unit. Entry and inspection of facilities and premises Searching for persons and objects (issuance of alerts and notices,recording missing person reports) Requisitioning vehicles and telecommunications devices Receiving crime reports, submitting crime and other reports to the competent State Attorney's Office (types of reports, receiving crime reports,submitting crime reports (of known and unknown offenders),submitting special reports (with general data),submitting general reports) Securing crime scenes Concept of the crime scene, writing crime scene reports Checking phone records Polygraph testing Visual inspection of documents Entry to a private home

	Offering rewards to the public, audio and video recording and photographing in public places Undercover police activities Use of force Means of force (the concept and objective for the use of force, general requirements for the use of force, legal conditions – exclusion of responsibility) The concept, objective and types of means of force. The concept of resistance, attack, catching in the act and escape. Real and legal restrictions. Obligations of the police officer after the use of force. Procedures after the use of force. Assessment of justification and legality of use of force. Use of physical strength, irritating sprays and batons. Use of restraints. Use of tyre deflation devices. Use of police dog and police horse as a means of force. Use of force against a group. Use of special vehicles. Use of chemical substances. Use of water cannons. Tactics of procedures in cases of disturbing the peace in open and enclosed space. Use of firearms against persons. Protection of life. Preventing escape from the scene of the crime. Use of firearms against animals. Use of firearms in pursuit of a vessel. Use of explosive devices and special types of weapons. Protection of police officers after the use of force. Checking flags, pursuit, stop, seizure and escort of vessels Particularities of using police powers against children and juveniles, persons who enjoy immunity and against foreign nationals Provisions of the Family Act and the Juvenile Courts Act. Use of police powers against children, juveniles, foreign nationals and persons claiming immunity. Types of immunity from criminal prosecution. Identification of persons and vehicles entitled to privileges and immunities Protection of crime victims and other persons Use of force in cases of a breach of the peace
Format of instruction:	☐ lectures ☐ individual assignments ☐ seminars ☐ multimedia ☐ exercises ☐ lab exercises ☐ *on line* in entirety ☐ mentoring ☐ field work
Student responsibilities	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1	Research		Practical training	1
	Experimental work		Report		Independent study and homework (other)	
	Essay		Seminar paper		(Other)	
	Midterm/ End of term exams	2	Oral exam		(other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Gluščić, Veić: Zakon o policijskim poslovima i ovlastima. MUP RH 2015. (NN 76/09, 92/14.)		yes

	2. Pravilnik o načinu postupanja policijskih službenika (NN 89/010., 76/15.)		yes
	3. Mršić: Osnova sumnje – izvorište policijskih ovlasti, Hrvatska pravna revija br. 4/011.		yes
	4. Grigoleit, Štrk, Wulff (2005): *Taktika policijskog postupanja* (2. izdanje). Zagreb: MUP RH.		yes
	5. Pavišić, B. i sur. (2006): Kriminalistika Zagreb: Golden marketing – Tehnička knjiga		yes
Optional literature (at the time of submission of study programme proposal)	1. Policija i ljudska prava (Davor Gjenaro, Stjepan Gluščić, Ranko Helebrant, Saša Lalić) 2. Policijski priručnik – temeljne ovlasti policije (Ljubica Bakić-Tomić, Mirjana Grubišić-Ilić, Irena Cajner-Mraović, Zvonimir Dujmović, Stjepan Gluščić, Dražen Ivanušec, Stipe Ivanda, Petar Veić)		
Quality assurance methods that ensure the acquisition of exit competencies			
Other (as the proposer wishes to add)			

4.11.8.12 Simulator and On-board Training IV

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">SIMULATOR AND ON-BOARD TRAINING IV</td></tr>
<tr><td>Code</td><td>VPS116</td><td>Year of study</td><td colspan="4">4th</td></tr>
<tr><td>Course teacher</td><td>Tino Sumić, M.Eng.</td><td>Credits (ECTS)</td><td colspan="4">2</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>0</td><td>45</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory for Naval Marine Engineering</td><td>Percentage of application of e-learning</td><td colspan="4">0</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Prepare students for onboard practice, in accordance with STCW and SOLAS conventions.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6">On-board Training I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">Upon successful completion of the course, the students will acquire practical familiarisation with vessel, engine room and its systems, and will master basic methods, techniques, and skills in preparing, managing and supervising the ship's propulsion plant and auxiliaries when in port and under way, and so in the conditions of failure</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Exercises:

-Detecting, recognising and eliminating the operational malfunctions of fuel injection timing-eliminating of failure in this system.
-Detecting, recognising and eliminating the operational malfunctions of liner wear in one of the cylinders, fire in the scavenge air register-eliminating of failure in these systems.
-Detecting, recognising and eliminating the operational malfunctions in the operation of the turbocharger (suction and pressure side), malfunctions in the operation of the scavenge air heat exchanger, loss of power in the main power busbars-eliminating of failure in these systems.
-Detecting, recognising and eliminating the operational malfunctions of stained filter, main bearing overheating; malfunctions in the operation of the circulation pumps- eliminating of failure in these systems.
-Detecting, recognising and eliminating the operational malfunctions of overflooded bilge tank, failure of receiving the bridge orders. Unplanned maintenance – detection and elimination of the malfunctions and failures in the above systems.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☐lectures
☒ seminars and workshops
☒exercises
☐entirely online
☐ combined with e-learning
☒ field work</td><td colspan="3">☐ independent tasks
☐ multimedia
☐ laboratory
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Attending exercises (at least 95% attendance), going to field classes (at least 100% attendance).</td></tr>
<tr><td rowspan="4">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the</td><td>Attendance</td><td>1,125</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Homework</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar work / paper</td><td>0,875</td><td>(other)</td><td></td></tr>
<tr><td>Midterm/End of term exams</td><td></td><td>Oral exam</td><td></td><td>(other)</td><td></td></tr>
</table>

ECTS value of the course)	Written exam		Project work		(other)	

Grading and evaluating student work in class and at the final exam	**Continuous evaluation of students' performance**		
	Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
	Attendance	95	56,25
	Seminar work	100	43,75

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Available through other media**
	K. Mollenhauer; H. Tschoeke: „Handbook of Diesel Engines“, ISBN 978-3-540-89082-9 e-ISBN 978-3-540-89083-6, DOI 10.1007/978-3-540-89083-6, Springer Heidelberg Dordrecht London New York, 2010.		YES
	J. B.Lheywood: „Internal combustion engine fundamentals“, ISBN-13: 978-1260116106, ISBN-10: 9781260116106, McGraw-Hill, Inc. 2006		YES
	H. D. McGeorge: „ Marine Auxiliary Machinery, 7th Edition“, Paperback ISBN: 9780750643986, eBook ISBN: 9780080511030, Butterworth-Heinemann, 1998.		YES

Optional literature (at the time of submission of study programme proposal)	Instruction manuals of ship simulator Konsberg ERS MAN B&W 5L90MC-C L11 VLCC Instruction manuals on 2-stroke and 4-sroke marine engines.
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty.
Other (as the proposer wishes to add)	

4.11.8.13 4.11.8.13. Naval Combat Systems

NAME OF THE COURSE	**NAVAL COMBAT SYSTEMS**						
Code	VPS117	Year of study	4th				
Course teacher	Luka Mihanović, Ph.D.	Credits (ECTS)	4				
Associate teachers	Jakša Mišković, M.Eng. Darija Jurko, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	15	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning	20%			

COURSE DESCRIPTION	
Course objectives	1. Adopt basic and specific knowledge and skills on naval artillery, missiles, weapons used in Mine Warfare (MW) including mine countermeasures (MCM), as well as Anti-

	Submarine Warfare (ASW), which are necessary for the successful performance of the initial duties on board the Croatian Navy ships. 2. Master the knowledge on effects tactics of use of naval weapons systems (artillery, missiles, naval mines, MCM, torpedo and anti-submarine armaments) in the Croatian Navy. 3. Train students in planning and performing various tactical tasks independently.	
Course enrolment requirements and entry competences required for the course	No special requirements	
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Understand the basics of the ballistics and theory of artillery firing. 2. Identify different types of artillery ammunition and fuses and their use in firing at different types of targets, 3. Know the different types of naval guns in the Croatian Navy, and their tactical use. 4. Know the most significant naval gun systems of the modern world's navies. 5. Know the principles of combat use and maintenance of naval missile system RBS-15B. 6. Understand basic principles of naval mine and mine-countermeasure systems. 7. Understand basic principles of torpedoes and anti-submarine weapons systems. 8. Understand basic principles of anti-submarine warfare.	
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Basics of the ballistics and theory of artillery firing 2. Artillery ammunition and naval guns in the Croatian Navy 3. Firing on targets at sea, on land and in the air 4. Most significant naval artillery systems of World's Navies. 5. Modern missile systems and future development 6. Basics of aerodynamics and the construction of the naval missile system RBS-15B 7. Naval missile system RBS-15B servicing and maintaining 8. Ship's detection and underwater explosion 9. Naval mine systems 10. Naval MCM systems 11. Anti-submarine warfare systems 12. Torpedoes and their use **Exercises:** 1. Naval weapons systems in the Croatian Navy 2. Structure, maintenance and servicing of the naval missile system RBS-15B	
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☐ multimedia ☐ laboratory ☐work with mentor ☐ (other)

<table>
<tr><td>Student responsibilities</td><td colspan="6">Lecture attendance is mandatory (there is a record of attendance), and it is 80% at lectures in order to obtain thecourse teacher’s signature. If the attendance requirement is not met, student is obliged to re-enrol in the course in the next academic year.
There will be a midterm and end of term written exam. For a passing grade, it is needed at least 50% of points on each exam. Students who have not passed the midterm exam are not allowed to take the end of term exam. Students that have obtained the signature but have not passed midterm or end of term exam, are obligated to take the final written exam. Students that have enough points to pass the course have to apply for the exam during the first examination period in order to get their grade entered, or to have an oral exam if they want a better grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Self-study and homework assignments</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/End of term exams</td><td>2,9</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Lectures are obligatory for students (records of attendance are kept). To get a signature, students must attend a minimum of 80% of the lectures. In case of insufficient attendance at classes, students are not entitled to sign and are required to re-enroll the course again the following year. Students have the opportunity to pass the exam by continuous evaluation during the semester by taking a total of 2 written mid term test. At each mid term test, it is necessary to achieve a minimum of 50% of points for passing. Students who do not pass the 1st mid term test cannot access the writing of the 2nd mid trem test Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam. Students who have collected a sufficient number of points during the course, are required to register for the exam for the first exam period after the lecture and in the term of the exam to come to the registration of grades or answer for a higher grade.

Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>80</td><td>10</td></tr>
<tr><td>1st Mid-term exam</td><td>50</td><td>45</td></tr>
<tr><td>2nd Mid-term exam</td><td>50</td><td>45</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Exam (written and/or oral)</td><td>50</td><td>70</td></tr>
</table></td></tr>
</table>

Other activities (including all factors of continuous evaluation)	50	30
Total		100

Grading:

Points (%)	Criteria	Grade
0-49	does not fulfil minimal criteria	fail (1)
50-64	fulfils minimal criteria	satisfactory (2)
65-79	Average achievement with noticeable deficiencies	good (3)
80-89	Above average achievement with a few deficiencies	very good (4)
90-100	Exceptional achievement	excellent (5)

Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam within the exam period. The same assessment criteria apply to the examination period as to the continuous assessment of knowledge

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Donald E. Carlucci, Sidney S. Jacobson: Ballistics-Theory and Design of Guns and Ammunition, Third Edition, CRC Press, 2018		YES
Seller (J.) Leather, The Sea-Gunner: Shewing the Practical Part of Gunnery, As it is Used at Sea, etc.,		YES
Norman Friedman, Naval Institute Guide to World Naval Weapon Systems, Naval Institute Press, 2006.		YES
Warren J. Boord , John B. Hoffman, Air and Missile Defense Systems Engineering 1st Edition, CRC Press, 2016.		YES
Ashton Carter, David N. Schwartz, Ballistic Missile Defense, Brookings Institution Press, 1984.		YES
STANAG 1242 – Naval Mine Warfare Principles – ATP-6(C) Volume I STANAG 1152 – Allied Anti-submarine Warfare Manual – ATP-28(B)		YES
Morison, S., „Guide to naval mine warfare“, 1995.		YES
Howard S. Levie, „Mine Warfare at Sea“, 1992.		YES

	Department Defense, U. S. Military, U. S. Navy, „Naval Mines in the 21st Century: Can NATO Navies Meet the Challenge?“, 2017.		YES
	Turner Publishing , „Naval Minewarfare“, 1995.		YES
Optional literature (at the time of submission of study programme proposal)	1. George M. Siouris, Missile guidance and Control Systems, Air Force Institute of Technology, 2004 2. RBS-15B Technical description 3. Cowie, J. S.: **“**Mines, minelayers and minelaying”,1951.		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students’ attendance, evidence of professors’ attendance, student questionnaire, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.8.14 Breakdown and Failure Diagnosis

NAME OF THE COURSE	**BREAKDOWN AND FAILURE DIAGNOSIS**					
Code	VPS118	Year of study	4th			
Course teacher	Luka Mihanović, Ph.D.	Credits (ECTS)	3			
Associate teachers	Tino Sumić, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning	/			
COURSE DESCRIPTION						
Course objectives	Understanding the causes of failures in marine engine systems and machinery, and their timely elimination. Familiarisation with expert systems for diagnostics of the state of marine engines and machinery.					
Course enrolment requirements and entry competencies required for the course	Marine engines, Marine Auxiliary Engines and Machinery					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Define and explain the basics and the methods of detecting failures. 2. Explain the causes of failures in designing, manufacturing, assembling, transport, test run, operation, maintenance and supervision 3. Analyse failures in diesel engines 4. Analyse failures in steam generators 5. Analyse failures in steam and gas turbines 6. Analyse failures in auxiliary engines and machinery 7. Analyse failures in electric machines					
Course content broken down in detail by weekly class schedule (syllabus)	1. Diagnosis of failures-goal and essence; technical diagnostics; techniques of measurement and control; classification and characteristics of the measurement devices; errors of measurement. 2. Measurement devices and tests; timing, speed, pressure, temperature, flow, level. 3. Vibration, noise, power, indicated pressures measurement. 4. Characteristics of modern marine propulsion and auxiliary equipment; Research and study work processes; development trends. 5. Selecting relevant features, diagnostic measurement points; influence and interdependence of relevant features.					

	6. Requests classification societies and IMO regulations for monitoring and safety of machinery and equipment. 7. Analysis of Marine diagnostic system; fuel system. 8. Oil system. 9. Refrigeration system. 10. Air and exhaust system. 11. Expert systems for diagnostics; terms and definitions; expert systems for control and diagnostics of the slow-stroke engines. 12. Expert Systems for monitoring and diagnostics to four-stroke high speed engines. 13. Analysis of the working media and diagnostics; requirements for the quality of the media; characteristics of oils, fuels. 14. Diagnostics status and characteristics of refrigerants and exhaust; IMO regulations on exhaust emissions and emissions reduction. 15. Diagnostics of auxiliary ship equipment. **Exercises:** 1. Examples of measurement methods; determining errors of measurement and statistical methods. 2. Examples of measurement and testing in laboratories, test and tables on board: temperature, pressure, speed, time, flow; work on the simulator. 3. Examples of measurements and tests in laboratories, test and tables on board: power, indicated and effective pressure; tasks; example of test tables. 4. Examples of new technological solutions; performance on ships. 5. Examples and assignments with values obtained on ship propulsion systems; work on the simulator. 6. Comparison of the rules of world classification societies. 7. Analysis of fuel system with the determination of the size and tasks; work on the simulators. 8. Analysis of oil system with determining the size and tasks; work on the simulators. 9. Analysis of cooling system with determining the size and tasks; work on the simulators. 10. Analysis of air and exhaust gasses system with determining the size and tasks; work on the simulators. 11. Examples of expert systems from the manufacturer MAN B & W and Wartsila. 12. Examples of expert systems from the manufacturer MAK, Caterpillar. 13. Examples of tests of oil and fuel to the engine and analysis of failures of service reports. 14. Examples of test of the cooling medium in the engine and analysis of failures of service reports. 15. Analysis of failures in the ship's equipment and machinery.	
Format of instruction:	**X**lectures ☐ seminars and workshops **X**exercises ☐*entirely online* ☐ combined with e-learning **x** field work	☐ individual assignments ☐ multimedia ☐ laboratory exercises ☐ mentoring ☐ (other)
Student responsibilities	Lectures are obligatory for students because records of attendance at classes are kept. To get a signature, students must attend a minimum of 80% of lectures. In case of insufficient number of attendances, students do not have	

<table>
<tr><td></td><td>the right to sign and are required to re-enroll in the course next year. Students have the opportunity to pass the exam by continuous evaluation during the semester by taking 2 mid term tests. The student is required to attend all mid term test. Students who do not pass the mid term tests during the semester, and have a signature, are required to take a written exam within the exam period. Students who have collected a sufficient number of points during the class are required to register for the exam via Studomat for the first exam period after the lecture and to come to the registration of the grade or to answer for a higher grade.</td></tr>
<tr><td>Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>
<table>
<tr><td>Class attendance</td><td>1,125</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>1,875</td><td>Oral exam</td><td></td><td>(other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(other)</td><td></td></tr>
</table>
</td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td>
Lectures are obligatory for students (records of attendance are kept). To get a signature, students must attend a minimum of 80% of the lectures. In case of insufficient attendance at classes, students are not entitled to sign and are required to re-enroll the course again the following year. Students have the opportunity to pass the exam by continuous evaluation during the semester by taking a total of 2 written mid term test. At each mid term test, it is necessary to achieve a minimum of 50% of points for passing. Students who do not pass the 1st mid term test cannot access the writing of the 2nd mid trem test Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam. Students who have collected a sufficient number of points during the course, are required to register for the exam for the first exam period after the lecture and in the term of the exam to come to the registration of grades or answer for a higher grade.
Continuous evaluating of students:
Continuous evaluation of students' performance
<table>
<tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Class attendance</td><td>80</td><td>37,5</td></tr>
<tr><td>1st Mid-term exam</td><td>50</td><td>31,25</td></tr>
<tr><td>2nd Mid-term exam</td><td>50</td><td>31,25</td></tr>
</table>
Final examination:
<table>
<tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Exam (written and/or oral)</td><td>50</td><td>62,5</td></tr>
</table>
</td></tr>
</table>

	Other activities (including all factors of continuous evaluation)	lectures 80 exercise 100	37,5
	Total		100

Grading:

Points (%)	Criteria	Grade
0-49	does not fulfil minimal criteria	fail (1)
50-64	fulfils minimal criteria	satisfactory (2)
65-79	Average achievement with noticeable deficiencies	good (3)
80-89	Above average achievement with a few deficiencies	very good (4)
90-100	Exceptional achievement	excellent (5)

	Title	**Number of copies in the library**	**Available via other media**
Required literature (available in the library and via other media)	1. Handbook of Technical Diagnostics Fundamentals and Application to Structures and Systems; Editors: Czichos, Horst (Ed.)2013 edition		YES
	2. Combustion Engine Diagnosis: Model-based Condition Monitoring of Gasoline and Diesel Engines and their Components; Rolf Isermann,Springer, 2017.		YES
	3. Inspection, Repair and Maintenance of Ship Structures, 2nd Edition (eBook), 2009.		YES
	2. Lectures on the Web		YES
Optional literature (at the time of submission of study programme proposal)	1. Woodyard D.: *Pounder's Marine diesel engines and gas turbines*, Elsevier, 2004		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.8.15 Marine Refrigerating and Air-conditioning Systems

NAME OF THE COURSE	**MARINE REFRIGERATING AND AIR-CONDITIONING SYSTEMS**						
Code	VPS119	Year of study	4th				
Course teacher	Zdeslav Jurić, Ph.D.	Credits (ECTS)	4				
Associate teachers	/	Type of instruction (number of hours in a semester)	L	S	E	F	
			30	0	15	0	

Status of the course	Mandatory for Naval Marine Engineering	Percentage of application of e-learning	
COURSE DESCRIPTION			
Course objectives	Use of basic and advanced knowledge on cooling devices, their application onboard vessels, their operation and exploitation, precaution measures and environment protection. Maintenance and surveillance of marine cooling devices. Dimensioning marine cooling system and its components. Acquiring knowledge on cooling fluids and their effects on human health and environment. Calculation of ventilation (natural and forced). Calculation of onboard air-conditioning systems.		
Course enrolment requirements and entry competencies required for the course	Thermodynamics and Heat Transfer		
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Analysis and classification of marine refrigeration and air-conditioning systems. 2. Energy efficiency assessment of marine refrigeration and air-conditioning systems. Measures for energy efficiency increasing. 3. Analysis of interdependence of states and cause-effect of alarm values. 4. Maintenance planning of refrigeration and air-conditioning systems. 5. System management (of refrigerating and air-conditioning systems) at complex and changeable environment. Success planning, maintaining and controlling at unpredictable situations.		
Course content broken down in detail by weekly class schedule (syllabus	1. Introduction to cooling technique. Types of cooling chambers and spaces. Insulation materials. 2. Cooling processes and classification of cooling machinery and devices. Measures for improving cooling efficiency. 3. Cooling fluids, their selection and area of application. Elements of the compressor cooling device. 4. Capacity regulation, Fundamentals of calculating reciprocating compressor. 5. Condensers (heat calculation). Liquid cooling medium storage tank. Heat exchangers (plates and tubular). Evaporators (calculation). 6. Determining basic values of the steam compressor cooling devices. Systems for melting the hoar frost from the evaporator are cooling tubes (battery). 7. Ways of temperature regulation in cooling devices. Automation and basic elements of automation of the marine cooling facilities. Remote control. 8. Heat pumps and use of cooling devices as heat pumps. Fundamentals of exploitation and testing of the marine compressor-type cooling devices. 9. Meteorological-climatological and hygienic effects on heating, ventilation and air-conditioning. Ventilation in vessels. Ventilation pipelines and fans. Air distribution. 10. Regulation of fan operation in the ventilation and air-conditioning systems. The need of air drying on board vessels. Rotation device for air drying. 11. Air-conditioning onboard a vessel, according to Croatian Register of Shipping (factors of comfort). Mechanical, heat-humid and physical-chemical treatment of air. 12. Fundamentals of calculating the air conditioning system. 13. Basic systems of onboard air-conditioning – operation layout for the summer and winter period in the h, x – diagram. 14. Regulation systems in the air-conditioning plant (enthalpy, static pressure, heating and cooling, relative humidity). 15. Heat and recovery in the ventilation and air-conditioning systems.		
Format of instruction:	☑ lectures	☐individual assignments	

	☐ seminars and workshops ☑ exercises ☐*entirely online* ☐ combined with e-learning ☐ field work	☐ multimedia ☐ laboratory exercises ☐ mentoring ☐ (other)

Student responsibilities	Class attendance is obligatory for all students. Class attendance is confirmed by students' signature on, for that purpose, prescribed record sheet. Students have to attend at least 80 % of lectures and 80 % of exercises. At the beginning of the semester students get topics for seminar and they deliver presentations in class. Students fulfil their obligations regarding the course when they reach minimum class attendance and give seminar presentation. Students who have not fulfilled their obligations shall not attend oral exam. Those students shallre-enrol in the course the next academic year.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1,1	Research		Practical training	
	Experimental work		Report	0,4	Independent study and homework (other)	
	Essay		Seminar paper	0,5	(other)	
	Midterm/ End of term exams	2	Oral exam		(other)	
	Written exam		Project		(other)	

Grading and evaluating student work in class and at the final exam

Final evaluation includes class attendance, midterm exams or written exam evaluation, seminar presentation and oral exam evaluation. All components have to be evaluated positively, at least with minimum criteria met, in order to pass final exam. Final exam consists of the written and oral exam.
During semester midterm exams will be carried out. If both midterm exams are positively evaluated, students may sit for the written exam within the first final examination period. If one of the midterm exams is not positively evaluated, students have the opportunity to retake that exam within the first final written exam.
Students pass the final exam when all criteria are met with minimal requirements: class attendance, seminar presentation, written or midterm exams and oral exam.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Class attendance	Lecture 80 Exercises 80	28,125
Seminar	100	9,375
Paper	100	12,5
1st Midterm exam	50	25
2nd Midterm exam	50	25

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)

Class attendance	Lecture 80 Exercises 80	28,125
Seminar	100	21,875
Written or midterm exams	50	28,125
Oral exam	70	21,875

Grading scale:

Points (%)	Criterion	Grade
0 – 50	Does not meet minimum criteria	Fail (1)
50 – 65	Meets minimum criteria	Sufficient (2)
65 – 80	Average success with noticeable mistakes	Good (3)
80 – 95	Above-average success with few mistakes	Very good (4)
95 – 100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Available via other media**
Required literature (available in the library and via other media)	Harbach, J.A., Marine Refrigeration and Air-Conditioning, Cornell Maritime Press, Centerville, Maryland, 2005. (ISBN 978-0-87033-565-5)		YES
	Dossat, R.J., Horan, T.J., Principles of Refrigeration, 5th ed., Prentice Hall, New Jersey, 2001. (ISBN 0-13-027270-1)		YES
Optional literature (at the time of submission of study programme proposal)	Roy J. Dossat, Principles of Refrigeration, Prentice Hall, ISBN: 978-0130272706 James Harbach, Marine Refrigeration and Air-Conditioning, Cornell Maritime Press, ISBN: 978-0870335655 Ozretić, V.: Brodski pomoćni strojevi i uređaji, Ship management, Split, 1996.		
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitoring by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.8.16 Naval Propulsion Systems

NAME OF THE COURSE	**NAVAL PROPULSION SYSTEMS**						
Code	VPS120	Year of study	4th				
Course director	Luka Mihanović, Ph.D. Gojmir Radica, Ph.D. Nikola Račić, Ph.D.	Credits (ECTS)	7				
Associate teachers	Tino Sumić, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			60	0	30	0

Status of the course	Mandatory for Naval Marine Engineering	Percentage of e-learning application	
COURSE DESCRIPTION			
Course objectives	The main objective of this course is to introduce students with propulsion systems of warships which have many specific requests causing different development and characteristics of each component including the whole system.		
Course enrolment requirements and entry competences required for the course	No special requirements.		
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Understand basic requests of warship propulsion systems 2. Understand working principles of warship propulsion systems 3. Identify and explaining main parts of warship propulsion systems 4. Understand the importance of propulsion reliability 5. Differentiate construction arrangements of propulsion systems 6. Define and explain damage resistance and smaller contamination possibilities in actions at sea 7. Identify and explain main maintenance procedures on warship propulsion systems 8. Describe and compare different arrangements of combined drives 9. Understand advantages of combined drives in various conditions of exploitation		
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures:** 1. Historical development of the installation of propulsion systems on warships 2. The requirements for propulsion machineries on modern warships 3. Types of propulsion machineries (steam turbines, gas turbines, diesel engines) installed on warships 4. Comparison of propulsion machineries: diesel engines, steam turbines, gas turbines; Rankine-Clausius thermal process, thermal process in steam plants; influence of steam parameters on the thermodynamic efficiency, steam reheating and multi-stage expansion. 5. Types of steam turbines, steam flow in a turbine, power of a steam turbine, optimizing the degree of activity; energy losses inside of a steam turbine; use of steam and schedule of thermal energy consumption, regenerative feed-water heating. 6. Performances of ship steam turbines; single-stage action, single-stage impulse turbine with the speed rating of steam, multi-stage impulse turbine with the pressure rating of steam, multi-stage reaction turbine, combined turbines; parts of a steam turbine; nozzles, blades, rotor, glands, bearings, casing, couplings. 7. Basic features of ship steam generators; the purpose of steam generators on ships; thermal balance of steam generators. 8. Main construction parts and accessories of steam generators; drive and maintenance of ship steam generators. 9. Exhaust gas steam generators, basic ways of connecting recovery boilers; automatic regulation of steam generators; load regulation, burner control systems, power supply, overheating temperatures. 10. Reducer, rotor rotating mechanism, condenser, lubricating oil system; steam turbine regulation system; power regulation, spin speed regulation, system preventing a spin speed exceeding, power measuring system. 11. Gas turbines; open process of a gas turbine, air heating after compression, two-stage compression and expansion; main parts of a gas turbine plant; gas turbine, combustion chambers, combustion air heaters, fuel system. 12. Combined gas and steam turbine systems, basics of proper drive of ship heat turbines; preparation, heating and drive of turbines, gas turbine fuel; maintenance and drive of gas turbine plants; vacuum maintenance in a condenser, condensate control, drainage control, lubrication control. 13. Guidelines for operating steam-gas turbine system, maintenance of operational readiness of the drive, shutdown of the drive, supervision of turbine plants when out of service, turbine and condenser breakdown; turbine vibrations, turbine water		

	impact, blades breakdown, damaged casing and turbine rotors, turbine bearing failure, reducer failure, condenser malfunction. 14. Combined propulsion systems on warships (COSAG, CODOG/ CODAG, COGOG/COGAG, CODOD/CODAD, CODLAG). **Exercises:** 1. A visit to the engine room of RTOP-21 Šibenik, familiarization with the combined CODAG propulsion system. 2. Familiarization with parts of the ship's propulsion gas turbines, "Rolls-Royce" type Marine Proteus, in the engine cross-section cabinet. 3. Familiarization with a gas turbine for the generator drive in the engine cross-section cabinet. 4. Attending the starting preparations, starting, loading, shutting down and decommissioning of the gas turbine plant on RTOP-21 Šibenik. 5. Familiarization with ship's steam turbine propulsion in the cabinet. 6. Familiarization with an auxiliary fire tube steam generator in the engine cross-section cabinet. 7. In the „Lora" boiler room, familiarization of students with the system which produces boiling water and steam in the steam generators; operating the power system, emptying water from the steam generator and refilling the system; operating the fuel and air system, starting the steam generator, steam-collecting, operating the burners, heating the steam line, analysing working parameters of the steam generator. 8. Preparing and starting the auxiliary steam generator on BS-73 Faust Vrančić. 9. Familiarization with the ship's auxiliary steam generator on BŠ-72 Andrija Mohorovičić.

Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☒ field work	☐ independent assignment ☐ multimedia ☐ laboratory ☐ work with mentor ☒ simulator exercises
Student responsibilities	Lecture attendance is mandatory (there is a record of attendance), and it is 80% at lectures and 100% at exercises in order to get the course teacher's signature. If the attendance requirement is not met, a student shall re-enrol in the course in the next academic year. There will be a midterm and end of term written exams. For obtaining a passing grade, students need to achieve at least 50% of points on each exam. Students are allowed to retake only one exam (midterm or end of term) which they have not passed. Students that have obtained the signature, but have not passed midterm/end of term exams, are obligated to take the final written and oral exam. Students that have enough points to pass the course have to apply for the exam during the first examination term in order to get their grade signed in, or to have an oral exam if they want a better grade.	

Screening student work *(enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research		Practical training	1
	Experimental work		Report		Self-study and homework assignments	1,5
	Essay		Seminar essay		(other)	
	Tests	2,5	Oral exam	1	(other)	
	Written exam		Project		(other)	

Grading and evaluating student work in class and at the final exam

Attendance of classes is mandatory and the requirement is a minimum of 80% at lectures and 100% at exercises. There is a midterm exam in the 8th week and end of term exam in the penultimate week of the semester. The first one includes learning outcomes from 1 to 4, whereas the second one includes learning outcomes from 5 to 9. At least 50% is required for passing the midterm/end of term exam. Students who, for objective reasons, cannot take one of the two exams or fail to obtain a minimum percentage may retake one test. The final grade includes attendance, midterm and end of term exam results, written test, seminar paper and oral exam.

Continuous evaluation of students' performance

Elements of evaluating	Performance (min.%)	Portion of the final grade (%)
Class attendance	80	37.5
Midterm exam	50	31.25
End of term exam	50	31.25

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above- average achievement with a few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

Students who fail the midterm/end of term exams and have obtained the signature shall take the written exam in the examination period. The same grading criteria shall apply to the examination period and for continuous evaluation of knowledge.

Required literature (available in the library and via other media)

Title	**Number of copies in the library**	**Available through other media**
David Macaulay, Crossing on Time: Steam Engines, Fast Ships, and a Journey to the New World, Roaring Brook Press (2019)		YES
Bob Gordon, Model Steam Engines, Shire Publications (2010)		YES
Xingrang Liu, Ramesh Bansal, Thermal Power Plants: Modeling, Control, and Efficiency Improvement, CRC Press (2016)		YES
Matthew A Carr (Editor),Principles of Naval Engineering: Propulsion and Auxiliary Systems, US Naval Institute Press, (2012)		YES
Hans Klein Woud, Douwe Stapersma, Design of Propulsion and Electric Power Generation Systems, Institute of Marine Engineers(2002)		YES
Justin E Kerwin, Propulsion, Society of Naval Architects & Marine (2010)		YES
Robert Taggart, Marine propulsion: principles & evolution, Gulf Publishing Co (1969)		YES

Optional literature (at the time of submission of study

- Anthony F. Molland, Stephen R. Turnock, Dominic A. Hudson, Ship Resistance and Propulsion: Practical Estimation of Propulsive Power, Cambridge University Press (2011)

programme proposal)	- John Carlton, Marine Propellers and Propulsion, Butterworth-Heinemann (2007)
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire, Faculty teaching supervision.
Other (as the proposer wishes to add)	

4.11.9 5th Year, IX Semester

4.11.9.1 Scientific Research Methodology

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">SCIENTIFIC RESEARCH METHODOLOGY</td></tr>
<tr><td>Code</td><td>VPO135</td><td>Year of study</td><td colspan="3">5th</td></tr>
<tr><td>Course teacher</td><td>Merica Slišković, Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3">10%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">By overcoming the basic knowledge about the concept, methodology and technology of scientific and technical research, qualify students to independently implement simple research and writing, presentation and presenting papers..</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">n/a</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. Interpret the general concept of science and basic science characteristics and classification
2. To distinct and classify the type and structure of scientific and technical papers
3. To plan and organize technology research.
4. To provide and apply the methods of scientific research.
5. Present skills in writing, technical processing, presentation, and demonstration of paper</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. Introduction to Science
2. Scientific research activities.
3. Scientific works.
4. Professional works.
5. Methodology of scientific research
6. Science methods.
7. Application of scientific methods when writing papers.
8. Technology of scientific research
9. Preparing structure of scientific and technical paper
10. Paper writing and technical processing of scientific and technical works

Exercises:
1. The methodology of scientific research.
2. Scientific methods.
3. The technology of scientific research: identifying scientific problem, hypothesis, selection and analysis of topics (titles), development of a plan of research.
4. The technology of scientific research: compiling working bibliography, collecting, selection and study of literature and scientific information.
5. Writing of text and technical processing of scientific and technical works.
6. Planning of presentation.</td></tr>
<tr><td>Format of instruction:</td><td colspan="2">☒ lectures
☒ seminars and workshops
☐ exercises
☐on line in entirety
☒ partial e-learning</td><td colspan="3">☒ individual assignments
☐ multimedia
☐ laboratory exercises
☐ mentoring
☐ (other)</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">☐ field work</td><td colspan="2"></td></tr>
<tr><td>Student responsibilities</td><td colspan="8">Students must attend lectures. Their presence shall be registered and kept in records.
In order to get the signature students must attend at least 80% of the lectures.
In case of insufficient class attendance students will not be granted a signature and shall be obliged to re-enrol in the course the following year.
Students have to make individual assignments, seminar papers according to given instructions and oral presentation.
Students who have passed the exams during the semester must apply for the exam via Studomat for the first examination period after lectures and during that time must have their grade entered or be tested for a better grade.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>0.75</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td>1.25</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td>2</td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="8">Students are evaluated continuously during the semester. They are obligated to perform some tasks independently or in a team in designated time.
Students must independently write seminar paper according to given rules and in given time. Seminar paper must be orally presented.
Students who have passed the exams during the semester must apply for the exam via Studomat for the first examination period after the lectures and during that time must have their grade entered or be tested for a better grade.

Continuous evaluation of students' performance

<table>
<tr><th>Elements of Evaluation</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr>
<tr><td>Attendance of lectures and activity</td><td>80</td><td>10</td></tr>
<tr><td>Independent/ team tasks</td><td>100</td><td>20</td></tr>
<tr><td>Seminar paper</td><td>100</td><td>70</td></tr>
<tr><td>Overall</td><td></td><td>100</td></tr>
</table>

Grading scale:

<table>
<tr><th>Points (%)</th><th>Criterion</th><th>Grade</th></tr>
<tr><td>0-49</td><td>Does not meet minimum criteria</td><td>Fail (1)</td></tr>
<tr><td>50-64</td><td>Meets minimum criteria</td><td>Sufficient (2)</td></tr>
<tr><td>65-79</td><td>Average with noticeable mistakes</td><td>Good (3)</td></tr>
<tr><td>80-89</td><td>Above average with few mistakes</td><td>Very good (4)</td></tr>
<tr><td>90-100</td><td>Extraordinary performance</td><td>Excellent (5)</td></tr>
</table>
</td></tr>
</table>

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	1. Carey S., A Beginner's Guide to Scientific Method 4th Edition, Wadsworth, Cengage Learning, USA, 2011.		Yes
	2. Slišković M.: Scientific research methodology – Lectures, & PPT presentation		Yes
Optional textbooks and reading materials (at the time of submission of study programme proposal)	1. Kulenović Z., Metodologija istraživačkog rada, Pomorski fakultet Sveučilišta u Splitu, Split, 2005. 2. Zelenika R., Metodologija i tehnologija izrade znanstvenog i stručnog djela, Ekonomski fakultet Sveučilišta u Rijeci, Rijeka, 1998. 3. Žugaj M., Osnove znanstvenog i stručnog rada, "Zagreb", Samobor, 1989.		
Optional literature (at the time of submission of study programme proposal)	Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.9.2 Process Modelling and Simulation

NAME OF THE COURSE	PROCESS MODELLING AND SIMULATION					
Code	VPO136	Year of study	5th			
Course teacher	Pančo Ristov, Ph.D.	Credits (ECTS)	6			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			45	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Gaining detailed knowledge of modelling and simulation of systems and/or business process, ie, understanding the process simulation and VV&A models. The use of simulation in the development and analysis of business processes.					
Course enrolment requirements and entry competencies required for the course	Applied Computer Science					
Learning outcomes expected at the level of the course (4-10 learning outcomes)	1. Choosing an appropriate methodology for modelling business (maritime) process. 2. Create a conceptual model of the system/process being modelled. 3. Select and submit inputs to the model. 4. Develop mathematical and programming model. 5. The percentages of accuracy programming model with conceptual model. 6. Evaluate the output data from the model. 7. Compare the results obtained from multiple experiments. 8. Draw conclusions after experimenting with models and simulation.					

	9. Choose and customize the finished model in accordance with its own process. 10. Justify business processes or systems.	
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Presentation College. Introduction to the system and a conceptual model of the system. 2. Determining the terms simulation and simulating, model and modelling. 3. Types of simulation models, computer simulation. 4. The process simulation, the purpose of the simulation, the positive and negative aspects of the simulation. 5. V & A model. 6. Modelling methods (analytic, numerical and simulation modelling). 7. The basic ideas of discrete event simulation (entities, attributes, events...). 8. System dynamics. 9. Detailed description of the equations of system dynamics: state equations, the equation changes state, auxiliary equations, equation initial condition and constant and structural elements of the system, the dynamic nature of cause and effect relationships and circles detrimental effect etc. 10. Computer simulation of technical systems, organizational systems and natural systems, and simulation of complex systems and processes in the maritime industry. The application of modern software packages such as: Powersim, iThink, Simula and Vansim. 11. Discrete simulation - graphical method. 12. Typical problems that can be dealt with discrete event simulation (mass systems serving). 13. Methods and techniques of conceptual (activity cycle diagrams). 14. Analytical. 15. Markov models **Laboratory exercises** 1. Software package Powersim and iThing (way entrance/exit of the package, the syntax of programming packages, description of commands, the use of symbols, the development phase models). 2. Programming simple causal loop. 3. Programming and use simple interpolation functions and mathematical functions in the programming of simulation models 4. Programming and test functions and logic functions in the programming of simulation models. 5. Development of conceptual, mathematical and computer simulation models. 6. Creating and simulating electrical engineering models and behaviours modelled system. 7. Simulation of Electrical models depending on the power source. 8. Creating a model and simulate process of inventory management. 9. Creating models and simulation systems emptying and filling the tank. 10. Creating and simulating models disembarkation processes in the port. 11. Creating a conceptual model of mass serving (post office or hospital office). 12. Creating a conceptual model of mass serving (boarding passengers on the ship). 13. Analysis of students' suggestions for making your own models. 14. Creating a conceptual and programming model for each student. 15. Review and evaluation of the seminar paper for each student	
Format of instruction:	x lectures	x individual assignments

	☐ seminars and workshops x exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ multimedia ☐ laboratory exercises ☐ mentoring ☐ (other)
Student responsibilities	The presence at lectures and exercises of at least 80% is required as well as active participation in classroom. In case of insufficient class attendance, students are not eligible for signature and shall re-enrol the course next academic year.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	2	Research		Practical training	
	Experimental work	1,5	Report		(Other)	
	Essay		Seminar paper			
	Tests	1,5	Oral exam	1		
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Midterm exams are administered after lectures and exercises.
Students are expected to take part in exercises, implement and test software, such as Powersim or iThing and develop models to tasks.
Three midterm exams of theory are scheduled. The midterm exams will be in written form and it is necessary to achieve at least 50% of accurate responses. A student who positively solves all preliminaries is exempt from the written/oral exam and, depending on results; the score achieved on the final exam is entered in the "Indeks" (Student Transcript Book).
The midterm exam that is positively solved by students is recognized as a part of the final exam.
The exam consists of the theoretical written and/or oral part. The examination may be limited to students who have met the requirements (lecture attendance, laboratory exercises).
Class attendance and activity of each student in class is monitored and it is a part of the overall assessment.

Continuous evaluation of students' performance

Elements of evaluation	**Achievement (min.%)**	**Portion of the final grade (%)**
Attendance and activity during the course	At least 80 The most active students gain 5-10 points, depending of the activity.	10
1st Midterm exam	50	20
2nd Midterm exam	50	20
3th Midterm exam	50	20
Exercises	80	30
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Written exam	50	50

	Oral exam	50	20
	Previous activities (include all indicators of the continuous evaluation)	80	30
	Total		100

Grading scale:

Points (%)	Criterion	Grade
0-44,5	Does not meet minimal criteria	Fail (1)
45-61	Meets minimum criteria	Sufficient (2)
62-74	Average success with noticeable mistakes	Good (3)
75-87,9	Above-average success with few mistakes	Very good (4)
88-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	1. Birta, L. G., Arbez, G. (2013), Modelling and Simulation. Springer		yes
	2. Averill M. Law, (2007), Simulation Modeling & Analysis, McGraw-Hill		yes
	3. Brailsford, S., Churilov, L., Dangerfield, B., (2014), Discrete-Event Simulation and System Dynamics for Management Decision Making. John Wiley and Sons.		yes
Optional literature (at the time of submission of study programme proposal)	1. Roberts, N., Andersen, D., Deal, R., Garet, M., Shaffer, W., (1994), Introduction to Computer Simulation, a System Dynamics Approach, Productivity Press Inc. 2. W. David Kelton, Randall P Sadowski, Nancy B. Swets, (2009), Simulation with Arena, McGraw Hill. 3. Christopher A. Chung, (2004), Simulation Modeling Handbook: A Practical Approach, CRC Press. 4. Michael Pidd, (2004), Computer Simulation in Management Science, 5th Edition, Wiley 5. Fishman, G.S. (2001), Discrete-Event Simulation: Modeling, Programming, and Analysis, Springer, Berlin, Germa.		
Quality assurance methods that ensure the acquisition of exit competences	University survey, self-evaluation, student attendance list, passing rate analysis at the end of the academic year		
Other (as the proposer wishes to add)	Practical training should be conducted in groups, in a way 1/1, or one student one computer.		

4.11.9.3 Maritime Integrated Safety and Control Systems

COURSE TITLE	**MARITIME INTEGRATED SAFETY AND CONTROL SYSTEMS**		
Code	VPN131	Year of study	5th
Course teacher	Ivica Pavić, Ph.D.	Credits	4

<table>
<tr><td></td><td></td><td>(ECTS)</td><td colspan="4"></td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">10%</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">To become familiar with the establishment and maintenance of maritime integrated systems for safety and control in the connectivity with integrated management of the coastal and marine areas in order to preserve natural resources on the maritime domain and to improve protection of the marine environment. The objective is to enable sustainable development and the creation of conditions for realization of maximum profit, development of skills identifying the needs, determining the measures and decisions in accordance with applied technologies.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="6"></td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="6">-Be able to compare elements of the maritime integrated system for safety and control.
- Assess the way of establishing legal measures of the maritime integrated system for safety and control.
- Recommend activities for identifying needs.
- Demonstrate and present decision making process or processes in accordance with applied technologies
- Recommend the necessary measures in accordance with applied technologies.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures:
International legal framework of maritime safety.
The rights and obligations contained in the UN Convention on the Law of the Sea - UNCLOS
International Maritime Organization - IMO.
Measures applied by the states and the safety of navigation. The role of the European Maritime Safety Agency – EMSA.
Measures to prevent maritime accidents.
Reduction of the consequences after maritime accidents.
The role of the Agency for research of accidents in air, sea and rail transport.
Protection of the human life at sea, ecology and protection of the sea.
Control of the sea and models for managing marine and coastal environment of the Adriatic Sea.
Coast Guard, maritime transport and routing modes.
Risks and safety.
Implementation of the ISPS code.
Critical Infrastructures – CA and CA management.
The e-navigation.system.
Economic success in connectivity with the security.

Exercises:

Analysis of the establishment of the international legal framework of maritime safety.
Internet research of problems in connectivity with the rights and obligations contained in the UN Convention on the Law of the Sea - UNCLOS.
International Maritime Organization (IMO). EMSA. Internet research of relevant sites and working on project tasks.
Simulation of measures of states in connectivity with the safety of navigation.
The tasks in developing measures to prevent maritime accidents.</td></tr>
</table>

	Analysis of examples of reducing the consequences arising after maritime accidents. Analysis of the report of the Agency for research of accidents in air, sea and rail transport. Development of presentations about safety of life at sea, as well as the ecology and protection of the sea. Analysis of the functionality of the sea control. Visit to the Coast Guard. Introduction with the functions of the Coast Guard. Examples of risk. Creating plans in connectivity with the ISPS code. Visit to certain critical infrastructures (CA). E navigation system and expected application Presentation of examples of economic success in connectivity with security.
Format of instruction:	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☒ field work ☐ individual assignments ☐ multimedia ☐ laboratory exercises ☐mentoring ☐ (other)
Student responsibilities	Lectures and exercises are mandatory for students and records of attendance are kept. To get a signature, students must attend a minimum of 80% of classes (lectures and exercises). In case of insufficient attendance at classes, no signature or the right to take the exam will be given. Excuse note cannot justify or replace class attendance. Students are required to prepare and present a seminar paper.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1.125	Research		Practical training	0.7
	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Mid term test	0.7	Oral exam	1.475	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

Lectures and exercises are mandatory for students. Records of attendance at classes are kept. In order to get a signature, students must attend lectures and exercises. In case of insufficient number of attendances, no signature will be obtained. Based on the completed obligations, students can access the oral part of the exam. Students can write a seminar paper. The final exam is within the official exam deadlines. Examples of exam questions are available on the web. Students who re-enroll in the course in the following year are not recognized for parts of the exam.

Continuous evaluation of students' performance:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Attendance and activity during the course	95	50
Contionus evaluation (seminar paper)	50	50
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)

	50-64	Meets minimum criteria	Sufficient (2)
	65-79	Average success with noticeable mistakes	Good (3)
	80-89	Above-average success with few mistakes	Very good (4)
	90-100	Extraordinary success	Excellent (5)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	1. Lopez, J., Setola, R., Wolthusen, S., Critical Infrastructure Protection: Advances in Critical Infrastructure Protection: Information Infrastructure Models, Analysis, and Defense, Springer, Verlag Berlin Heidelberg, 2012		yes
	2. Baggett, R. K., Simpkins, B. K., Homeland Security and Critical Infrastructure Protection, 2nd Edition, Praeger, Santa Barbara, California, USA, 2018		yes
	3. Austin, R. F., DiSera, D. P., Brooks, T. J., GIS for Critical Infrastructure Protection, CRC Press, Taylor and Francis Group, Boca Raton, USA, 2012		yes
	4. http://www.imo.org/en/OurWork/Safety/Navigation/Pages/eNavigation.aspx		yes
Optional literature (at the time of submission of study programme proposal)	National security regulations acts, http://www.nn.hr/ http://www.emsa.europa.eu/		
Quality assurance methods that ensure the acquisition of exit competences	University survey, List of student attendance, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.9.4 Maintenance Management

NAME OF THE COURSE	MAINTENANCE MANAGEMENT					
Code	VPS121	Year of study	5			
Course teacher	Luka Mihanović, Ph.D.	Credits (ECTS)	4			
Associate teachers	Tino Sumić, M.Eng.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	15	0
Status of the course	Mandatory	Percentage of application of e-learning	/			
COURSE DESCRIPTION						
Course objectives	The goal of the course is to familiarise the students with the basic causes of malfunction and failures and to enable the students to apply the acquired knowledge to the ship's systems and the vessel in general.					
Course enrolment requirements and entry competencies required for the course						

Learning outcomes expected at the level of the course (4-10 learning outcomes)	Upon successful completion of this course the student is expected to be able to: 1. Explain the maintenance costs 2. Define and explain the basic causes of malfunction and failures 3. Define and explain the reliability of technical systems 4. Define and describe the maintenance strategies 5. Describe the ways of maintaining the underwater part of the hull 6. Define and explain the effect of spare parts on the maintenance procedure 7. Manage the system of planned maintenance on board the vessel	
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures** 1. Maintenance costs, effect on the maintenance costs over the entire life-span of the equipment, effect of the participants on the maintenance costs. 2. Damage and failures: initial, accidental, time-induced failures and malfunctions. The function of the distribution of failures: failure rate, failure index. 3. Reliability of technical systems: reliability with regard to initial malfunctions and failures, accidental failures, time-induced failures. Standard reliability curve. Complex reliability, redundancy, availability and usableness. 4. Technology of maintenance: requirements, spare parts, worklists, tools and equipment for maintenance, diagnostic tools and devices. 5. Organisation of maintenance. 6. Preventive maintenance, 7. Corrective maintenance, 8. Maintenance according to the state of the components. 9. Characteristic value of the technical system's state: technical diagnostics, methods of technical diagnostics. 10. Safe management and efficient procedures in maintenance and repair in accordance with the vessel's SMS. 11. Modern approaches to maintenance: RCM, logistic approach. 12. Organisation and technologies of maintenance in the shipping industry. 13. Maintenance of the underwater part of the ship's hull: spare parts. 14. Software supporting maintenance procedure and maintenance planning. 15. Influence of the classification societies on maintenance. **Exercises:** 1. Configurations of the ship systems and reliability – calculation examples. 2. IBM® SPSS® AMOS (Analysis of Moment Structures) – structural equation modelling software for the maintenance support and planning. Introduction to the software. 3. AMOS – developing a configuration of the maintenance of the ship systems. 4. AMOS – developing a configuration of the maintenance of the ship systems: adding a system, a sub-system, components. 5. AMOS – examples of the configuration of critical equipment. 6. AMOS – lists of the due maintenance items. 7. AMOS – creating working orders and assignments by maintenance items. 8. AMOS – examples of reports on the completed task. 9. AMOS – statistical analysis of the corrective maintenance share in the maintenance planning. 10. AMOS – examples of reports on the used spare parts. 11. AMOS – examples of the analysis of the spare part stock. 12. AMOS – making orders for the spare parts. 13. AMOS – examples of spare part stock updating (items used / received). 14. AMOS – service letters from the equipment manufacturers. 15. AMOS – examples of monitoring the maintenance of the ship systems and the control of ship certificates, in line with the requirements of the PMS classification societies.	
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises	☐ independent tasks ☐ multimedia ☐ laboratory

	☐*entirely online* ☐ combined with e-learning ☐ field work	☐ mentoring ☐ simulator exercises

Student responsibilities

Records of student attendance are kept as attending lectures and exercises is compulsory. Student is required to attend 95% of lectures and 100% exercises in order to obtain the course teacher's signature, take the exam and earn ECTS credits. Insufficient attendance has to be compensated by performing additional assignments (seminar papers). Students who have missed classes due to illness must have a valid medical document proving their health issues. Students who have achieved less than 50% of class attendance cannot obtain the teacher's signature and have to re-register the course in the following academic year.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Attendance	1,125	Research		Practical training	
Experimental work		Report		Independent study and homework (other)	
Essay		Seminar work / paper		(other)	
Midterm/End of term exams	1,875	Oral exam		(other)	
Written exam		Project work		(other)	

Grading and evaluating student work in class and at the final exam

Students' activity in class is assessed over the semester. Students take two written midterm tests. The first test comprises Lectures 1-8 and is held in the 8th week of the semester, while the second comprises Lectures 8-15 and takes place in the 15th week of the semester. Sample tests are available on the faculty's intranet. A student has to achieve at least 50% of points to pass a midterm test. In case a student passes both tests, he/she does not have to take the final exam. If a student has missed / failed one of the midterms for justified reasons, he/she can re-take that test in the following examination period. If a student has missed or failed both midterms, he/she has to take the complete final exam. The final written/oral exam is not obligatory for the students who have passed the midterms. A partial final exam is available to the students who have failed one of the midterms – the partial exam covering the area the students have not mastered.
Students who have obtained the teacher's signature but have failed or missed two or three midterm tests have to register for the final exam in the examination period. Students who have passed all the midterm exams are expected to register through the on-line service ("Studomat") in the first examination period to obtain the grade in his/her record book. The final grade is defined on the basis of student attendance and midterm test results. Students shall take the final oral exam in case they would like to achieve a higher grade. The same grading criteria apply for the continuous assessment of student achievements and for the final examination.

Continuous evaluation of students' performance

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Lecture attendance and exercises involvement	95	37,5
1st mid term test	50	31,25
2nd mid term test	50	31,25
Total		100

Final examination:

Elements of evaluation	Achievement (min.%)	Portion of the final grade (%)
Exam (written)	50	31,25
Exam (oral)	50	31,25
Contionous evaluation	Lecture 95 Exercise 100	73,50

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimum criteria	Fail (1)
50-64	Meets minimum criteria	Sufficient (2)
65-79	Average success with noticeable mistakes	Good (3)
80-89	Above-average success with few mistakes	Very good (4)
90-100	Extraordinary success	Excellent (5)

	Title	**Number of copies in the library**	**Available through other media**
Required literature (available in the library and via other media)	A.Kelly: Maintenance Planning nad Control, Butterworth-Heinemann Ltd, 1986		yes
	B.Vučinić: Maintenance Concept Adjustement of Design. Faculty of Mechanical Engineering and Marine Technology, 1994, ISBN 90-370-0112-2		yes
	A Guide to Ship Repair Estimates in Man Hours 1st Edition, Kindle Edition by Don Butler Butterworth-Heinemann, 2012		yes
	M. Khamis: Ship Repair Project Manager's Guide: Marine Traffic and Shipyards Maintenance Paperback, 2018		yes
Optional literature (at the time of submission of study programme proposal)reading			
Quality assurance methods that ensure the acquisition of exit competencies	Survey carried out by University of Split, List of student attendance, Teaching process monitored by Faculty, Analysis of the examination passing rate (Quality Management System in compliance with ISO 9001)		
Other (as the proposer wishes to add)			

4.11.9.5 Crisis Management at Sea

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">CRISIS MANAGEMENT AT SEA</td></tr>
<tr><td>Code</td><td>VPN132</td><td>Year of study</td><td colspan="3">5th</td></tr>
<tr><td>Course teacher</td><td>Ivica Pavić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="3">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td></tr>
<tr><td>30</td><td>0</td><td>15</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="3">10%</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Acquisition of knowledge in the organizational, technical, technological and legal framework of crisis management at sea.
Acquisition of knowledge about the types and sources of crisis situations at sea and contemporary maritime security threats,
Learning the basic principles of the organization of crisis management and mechanisms of countries and international organizations in crisis management at sea,
Training the students in the application of acquired knowledge and skills in the field of crisis management to sea.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at course level (4-10 learning outcomes)</td><td colspan="5">1. Describe the legal framework for crisis management at sea,
2. Analyse the types and sources of crisis situations at sea,
3. Explain the principles of the organization and crisis management at sea,
4. Identify risks in maritime transport,
5. Understand the mechanisms of states and international organizations in crisis management at sea,
6. Analysis and interpretation of maritime security threats and the responses to threats of countries and international organizations.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures
1. Introduction to the subject, conceptual definition of sources and types of threats to maritime security.
2. Legal framework for the investigation of marine casualties.
3. Maritime accidents as a source of crisis situations at sea.
4. Smuggling prohibited goods and materials as a source of crisis situations at sea.
5. Prohibited acts as a source of crisis situations at sea. Piracy and armed robbery at sea
6. Trafficking in human being and human being smuggling at sea.
7. Risk management analysis and methodology according to IMO.
8. Integrated maritime surveillance as a basis for crisis management to sea.
9. Maritime accidents analysis and research methodology. Organizational, technical and technological measures to prevent risks.
10. Organization and management of environmental accidents and pollution prevention. International and national legal framework of action. Technical and technological aspects.
11. The organization and management of search and rescue operations. International and national legal framework of action. Technical and technological aspects of the operation.</td></tr>
</table>

<table>
<tr><td></td><td colspan="5">12. Organization and activities of naval forces in preventing the smuggling of prohibited goods and materials. International and national mechanisms for activities of naval forces.
13. Organization and activities of naval forces in the counter piracy and prevention of armed robbery at sea. International and national legal framework.
14. Organization and activities of naval forces in prevention of trafficking in human beings and smuggling of human beings at sea. International and national legal framework.
15. Prediction of future threats to maritime security, The migration crisis, Facts, challenges, possible solutions and responses of naval forces
16. Development and planning of measures for preventing maritime risks, accidents and threats.

Exercises
1. Examples of methods of risk assessment.
2. Investigation methodology of marine casualties. Analysis of selected well known maritime accidents.
3. Analysis of selected well known cases of prevention of environmental accidents and pollution.
4. Analysis of the organization of search and rescue services.
5. Analysis of the operations of naval forces in counter piracy operations.
6. Analysis of the operations of national and international naval forces in prevention of trafficking in human beings and smuggling of human beings at sea.</td></tr>
<tr><td>Format of instruction:</td><td colspan="2">☒lectures
☐ seminars and workshops
☐on line entirely
☒exercises
☐ mixed e-learning
☐ field lectures</td><td colspan="3">☐ individual assignments
☐multimedia
☐ laboratory exercises
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="5">Lecture attendance is mandatory (there is a record of attendance), and it is 80% of lectures in order to get the right of signature. If the attendance requirement is not met, student is obliged to sign in for the class in the next academic year.
There will be two (2) mid-term written exams, one at 7th week and one at 14th week of classes. For the passing grade, it is needed minimum of 50% of points on each mid-term exam. Students who didn't pass the first mid-term are not permitted to take the second mid-term exam. Students that have a signature, but didn't pass mid-terms, are obligated to take a final written exam. Students that have enough points to pass the course have to sign up for the exam during the first term in order to get their grade signed in, or to have an oral exam if they want a higher grade.</td></tr>
<tr><td rowspan="6">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Lecture attendance</td><td>1,1</td><td>Research</td><td></td><td>Practical training</td></tr>
<tr><td>Experimental work</td><td></td><td>Paper</td><td></td><td>Independent study and homework (other)</td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>e-learning</td></tr>
<tr><td>Midterm/End of term exams</td><td>2,9</td><td>Oral exam</td><td></td><td>(Insert other)</td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Insert other)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="5">Lecture attendance is mandatory (there is a record of attendance), and it is 80% of lectures in order to get the right of signature. If the attendance</td></tr>
</table>

requirement is not met, student is obliged to sign in for the class in the next academic year.
There will be two (2) mid-term written exams, one at 7th week and one at 14th week of classes. For the passing grade, it is needed minimum of 50% of points on each mid-term exam. Students who didn't pass the first mid-term are not permitted to take the second mid-term exam. Students that have a signature, but didn't pass mid-terms, are obligated to take a final written exam. Students that have enough points to pass the course have to sign up for the exam during the first term in order to get their grade signed in, or to have an oral exam if they want a higher grade.

Continuous evaluation of students' performance

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80	10
1st Mid-term exam	50	45
2nd Mid-term exam	50	45

Final examination:

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Exam (written and/or oral)	50	70
Other activities (including all factors of continuous evaluation)	50	30
Total		100

Grading scale:

Points (%)	Criteria	Grade
0-49	does not fulfil minimal criteria	fail (1)
50-64	fulfils minimal criteria	satisfactory (2)
65-79	Average achievement with noticeable deficiencies	good (3)
80-89	Above average achievement with a few deficiencies	very good (4)
90-100	Exceptional achievement	excellent (5)

Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam within the exam period. The same assessment criteria apply to the examination period as to the continuous assessment of knowledge

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**

	Reason J.: Managing the Risks of Organizational Accidents, Ashgate Publishing, Hampshire, England, 1997.		YES
	Kristiansen, S.: Maritime Transportation: Safety Management and Risk Analysis, ElsevierButterworth-Heinemann, Burlington, UK, 2005.		YES
	IMO, ISM Code with guidelines for its implementation, 2014 Edition, IMO Publishing, London, United Kingdom, 2014		YES
Optional literature (at the time of submission of study programme proposal)	1. Edgerton, M, A Practitioner's Guide to Effective Maritime and Port Security 1st Edition, J. Wiley and sons, New Jersey, USA, 2013 2. Germond, B., The Maritime Dimension of European Security, Houndmills, UK, Palgrave MacMillan, 2015 3. Berube, Claude G. & Cullen, Patrick (Eds.), Maritime Private Security : Market Responses to Piracy, Terrorism and Waterborne Security Risks in the 21st Century, Abingdon, UK : Routledge, 2012 4. Metcalfe-Hough, Victoria, The migration crisis? Facts, challenges and possible solutions, available at www.odi.org		
Quality assessment methods that ensure acquisition of learning outcomes	University survey, list of student attendance, Faculty teaching supervision		
Other (as the proposer wishes to add)			

4.11.9.6 Military Logistic Systems Management

NAME OF THE COURSE	MILITARY LOGISTIC SYSTEMS MANAGEMENT					
Code	VPO137	Year of study	5th			
Course teacher	Luka Mihanović, Ph.D.	Credits (ECTS)	5			
Associate teachers	Jadranka Bilić, Ph.D.	Type of instruction (number of hours in a semester)	L	S	E	F
			30	0	30	0
Status of the course	Mandatory for all students	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	The aim of the course is to teach the students theoretical and practical knowledge of logistics systems, understand the needs of management, its planning and coordination, and to acquire analytical and managerial skills in order to apply the knowledge in Military logistic systems management .					
Course enrolment requirements and entry competences required for the course						

Learning outcomes expected at course level (4-10 learning outcomes)	1. Correctly interpret the concept and basic principles of logistics 2. Explain the logistics organisation. 3. Describe specific features of military logistics. 4. Describe maintenance processes. 5. Explain supply processes. 6. Explain various processes of production logistics. 7. Explain the organization of transport logistics 8. Explain the organisation of medical support 9. Describe the organisation of logistics in international organisations. 10. Carry out essential logistic calculations.
Course contents elaborated in detail according to class schedule (syllabus)	**Lectures:** 1. **Introduction to logistics systems management, 2** (concept, definition, objectives and goals of logistics, etymology and historical development of logistics, logistics as a science and logistics as a business activity, functional fields of logistics). 2. **Organisation of military logistics, 2** (concept, objectives and goals, historical development). 3. **Supply management, 2** (procurement, stocks management, storing and distribution) 4. **Maintenance management, 3** (objectives, strategies, levels, degrees and concept). 5. **Management of production logistics processes, 2** (production planning and control, material handling, packaging). 6. **Traffic logistics, 2** (transport, military transport function) 7. **Management of medical support, 2** (stationary health care and organisation of medical support in operations (ROLE)) 8. **Organisation of logistics in military branches, 2** (specific features of the Croatian Army and Croatian Air Force) 9. **Logistic support to the Croatian Navy, 2** (structure and specific features) 10. **Logistics in military operations, 3** (areas and units of support, logistics in MDMP - military decision making process) 11. **Organisations of logistics in NATO and EU, 3** (Structure, NATO-led operations, EU-led missions and operations) 12. **Organisation of logistics in the UN, 2** (structure and operational support) 13. **Material and financial management, 3** (structure, material accounting, SPP II) **Exercises:** 1. **Drawing up of supply materials budgets, 6** (calculation of required water and food in different weather conditions and in different geographical conditions 2. **Calculation of the required amount of ammunition, 6** (general ammunition and navy-specific ammunition) 3. **Planning of movement and transport assets, 6** (planning of transit time, length of the column/convoy type of vehicles, speed of the column/convoy type of vehicles, types of vessels/vehicles and necessary capacities) 4. **Fabrication of documentation for sending material resources, 6** (within the national system and in international operations) 5. **Ship logistic documentation, 6** (filling in engine logs, technical booklets, technical records, food logs)
	☒ lectures ☒ independent assignments

<table>
<tr><td>Format of instruction:</td><td colspan="3">☐ seminars and workshops
☒ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lecture attendance is mandatory (there is a record of attendance), and it is 90% atlectures and 100% at exercises in order to get the right of signature. A note of excuse cannot justify nor replace the class attendance. If the attendance requirement is not met, student is obliged to re-enrol in the coursethe next academic year.
Students who on account of illness or any other justified reasons do not fulfil the conditions for obtaining the signature and whose attendance at class is 80% or more will be able to work off remaining classes during consultation hours and by performing additional tasks.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>2,125</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Independent study and homework (other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>2,875</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Assessment and evaluation of full-time students' work
There are a midterm and end of term exams.
If students do not pass the midterm or end of term exam (minimum50% for passing grade) they shall take an oral exam.
If they pass the midterm and end of term exams they shall obtain an average grade.
In order to obtain the signature, students’ attendance at lectures shall be 95% and at exercises 100%.

Continuous evaluation of students' performance
<table><tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr><tr><td>Class attendance and exercise attendance</td><td>95/100</td><td>30</td></tr><tr><td>Midterm exam</td><td>50</td><td>35</td></tr><tr><td>End of term exam</td><td>50</td><td>35</td></tr><tr><td>Total</td><td></td><td>100</td></tr></table>
Final examination:
<table><tr><th>Elements of evaluating</th><th>Achievement (min.%)</th><th>Portion of the final grade (%)</th></tr><tr><td>Class attendance</td><td>95</td><td>30</td></tr></table></td></tr>
</table>

Exam (oral)	50	70
Total		100

Grading scale:

Points (%)	Criterion	Grade
0-49	Does not meet minimal criteria	Fail (1)
50-64	Meets minimal criteria	Sufficient (2)
65-79	Average achievement with noticeable mistakes	Good (3)
80-89	Above- average achievement with a few mistakes	Very good (4)
90-100	Exceptional achievement	Excellent (5)

Same grading criteria are valid for written final exam as for midterm/end of term exams.

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	NATO Logistics Handbook, 1110 Brussels, November 2012. https://www.nato.int/docu/logi-en/logistics_hndbk_2012-en.pdf		yes
	AJP-4 : Allied Joint Donctrine for Logistics, 2018		yes
	STANAG 2617, ALP-16 ED.A(1) : Allied logistics publications for explosive safety and munitions risk management (ESMRM) in NATO planning, training and operations, 2015		yes
Optional literature (at the time of submission of study programme proposal)	Pecina, Miroslav & Husák, Jan. (2018). Application of the New Nato Logistics System. Land Forces Academy Review. 23. 121-127. 10.2478/raft-2018-0014. Jeremy C.D. Smith: Defence Logistics: Enabling and Sustaining Successful Military Operations, 2018		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors' attendance, student questionnaire, Faculty teaching supervision.		
Other (as the proposer wishes to add)			

4.11.9.7 Physical Education

NAME OF THE COURSE	PHYSICAL EDUCATION						
Code	VPO138	Year of study	5th				
Course teacher	DomagojBagarić, M.P.Ed.	Credits (ECTS)	0				
Associate teachers	Ivica Bajaj, M.P.Ed.	Type of instruction (number of hours in a semester)	L	S	E	F	
			0	0	30	0	
Status of the course	Mandatory	Percentage of application of e-learning					

COURSE DESCRIPTION	
Course objectives	The course objectives are to learn and improve new motor knowledge and skills in order to influence anthropological characteristics (motor traits; functional, motor, cognitive and conative abilities), to improve one's health and work ability, to satisfy the need for bodily movement, to enable students to use and spend their free time wisely and live a quality life in youth, maturity and old age.
Course enrolment requirements and entry competencies required for the course	/
Learning outcomes expected at the level of the course (4-10 learning outcomes)	Demonstrate several basic and specific exercises for a certain kinesiological activity. Demonstrate the proper performance of new elements of a certain kinesiological activity. Perform stretching exercises for a certain kinesiological activity. Repeat the given new elements of a certain kinesiological activity in series. Demonstrate strength and flexibility exercises in order to prevent ostomuscular disorders. Integrate motor knowledge and skills for solo workout or a competition.
Course content broken down in detail by weekly class schedule (syllabus)	**Exercises:** 8. Regular testing of physical abilities 1. The development of functional abilities 2. The development of motor abilities 3. Fitness programs 4. Swimming 5. Naval pentathlon (naval obstacles, navy skills training area) 6. Navy skills training (rowing, sailing)
Format of instruction:	☐Lectures ☐ Seminars ☒ Exercises ☐ On-line in entirety ☐ Field work ☐ Individual assignments ☐ Multimedia ☐ Lab exercises ☐ Mentoring
Student responsibilities	Students are required to participate in exercises. Records of student attendance are also kept.

	Class attendance		Research		Practical training	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Experimental work		Report		(Other)	
	Essay		Seminar paper		(Other)	
	Midterm/ End of term exams		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	**Assessment and evaluation of full-time students' work** During the academic year, students are required to take two regular physical fitness tests to meet the established norms.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**

Optional literature (at the time of submission of study programme proposal)	Kožulj, Nj. Ćurčić, D. Rogalo, G.: Priručnik za tjelovježbu, Zagreb 2009. Maršić, T. Dizdar, D. Šentija, D.: Osnove treninga izdržljivosti i brzine, Zagreb, 2008.
Quality assurance methods that ensure acquisition of learning outcomes	University survey and teaching supervision.
Other (as the proposer wishes to add)	

4.11.105th Year, X Semester

4.11.10.1 Hydrographic Engineering

<table>
<tr><th>NAME OF THE COURSE</th><th colspan="5">HYDROGRAPHIC ENGINEERING</th></tr>
<tr><td>Code</td><td>VPN133</td><td>Year of study</td><td colspan="4">5th</td></tr>
<tr><td>Course teacher</td><td>Ivica Pavić, Ph.D.</td><td>Credits (ECTS)</td><td colspan="4">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Jakša Mišković, M.Eng.</td><td rowspan="2">Type of instruction (number of hours in a semester)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>0</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="4">30%</td></tr>
<tr><th colspan="6">COURSE DESCRIPTION</th></tr>
<tr><td>Course objectives</td><td colspan="5">Acquire knowledge of organization, technology, methodology and application of hydrography in the production of charts and nautical publications, and in particular of standards for the usage, production, maintenance and data protection of electronic navigation charts.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4-10 learning outcomes)</td><td colspan="5">1. Describe the organization of international hydrographic activity,
2. Analyse the role of International Hydrographic Organization,
3. Explain the principles of the hydrographic survey,
4. Understand the principles, capabilities and limitations of technological means used for hydrographic survey,
5. Analyse and interpret the data acquired by hydrographic survey.
6. Understand the principles of making nautical charts and publications.
7. Analyse and understand advantages and limitations of the usage of electronic nautical charts.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures
1. Introduction to the subject. Legal basement of the international hydrographic activity.
2. The organization of hydrographic activity in the world. The most significant world’s nautical charts and publications producers.
3. Hydrographic activity in the Republic of Croatia. Nautical charts and publications products.
4. The role of the International Hydrographic Organization in the development of the international hydrographic activity. Regional Hydrographic Commissions.
5. Hydrographic survey. Standards for hydrographic survey.
6. Depth measurement at sea – historical overview. The use of mechanical measuring devices.
7. Propagation of ultrasound waves in seawater. The application of echo sounders in hydrography.
8. The application of LIDAR technology in hydrography.
9. The usage, development and limitations of satellite systems in hydrography. Satellite althymetry and photogrammetry.
10. Principles of making hydrographic original. The process of nautical chart production. Generalization on nautical charts.
11. Bathymetric chart. The IHO’s General bathymetric chart of the ocean.
12. Contemporary principles of organization, display, infrastructure and usage od geospatial data. Application of geographic information system in hydrography.
13. Main features, characteristics, advantages and limitations of electronic nautical charts and display systems. IMO and IHO requirements. Chart Datums analysis. Comparison of analogue and digital data. RNC vs. ENC.</td></tr>
</table>

<table>
<tr><td></td><td colspan="6">14. Standards for digital hydrographic data. Model and structure of digital hydrographic data. Objects, attributes and product specifications.
15. Production, data protection and updates of ENC. Production, distribution, quality control and role of RENCs in the system of ENC. ENC updates, data protection scheme and distribution models.

Exercises
1. Analysis of maritime boundaries displayed on nautical charts.
2. The system of making nautical charts and publications.
3. Development of hydrographic original.
4. Development and interpretation of bathymetric charts.
5. Analysis of nautical charts produced by Croatian Hydrographic Institute.
6. Analysis of navigational publications produced by Croatian Hydrographic Institute.
7. Analysis of nautical charts produced by The United Kingdom Hydrographic Office.
8. Analysis of navigational publications produced by The United Kingdom Hydrographic Office.
9. Application of paper chart updates.
10. Application of nautical publication updates.
11. Raster nautical charts advantages and disadvantages analysis. .
12. Vector nautical charts advantages and disadvantages analysis.
13. Application of ENC updates.
14. The usage of digital chart catalogues in the process of passage planning.
15. Analysis of ECDIS related incidents.</td></tr>
<tr><td>Format of instruction:</td><td colspan="3">☒lectures
☐ seminars and workshops
☒exercises
☐on line entirely
☐ mixed e-learning
☐ field lectures</td><td colspan="3">☐ individual assignments
☐multimedia
☐ laboratory exercises
☐ mentoring</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Lectures and exercises are mandatory for students and records of attendance are kept. In order to receive a signature, part-time students must attend a minimum of 50% of lectures and exercises, and full-time students a minimum of 80% of lectures and exercises. In case of insufficient number of attendances, students do not have the right to sign and are required to re-enroll in the course again next year. The exam can be taken continuously through a mid term test or through a final exam (written exam).</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar paper</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Midterm/ End of term exams</td><td>2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td>1,5</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Two mid term test from the theoretical part of the exam are planned. The student is required to attend all mid term tests. At each mid term test, it is necessary to achieve a minimum of 50% of points for passing. The mid term test from the theoretical part is held in writing. A student who passes both mid term test positively is exempt from the written exam. For students who have successfully passed one mid term test, is is recognized as part of the passed final exam. The remaining part of the course is taken on the written part of the final exam in the term of the lecturer's exam period, with the application at Studomat, provided that they have a signature. For students who do not</td></tr>
</table>

pass the first or second mid term test in the theoretical part, a new ter for the mid term test will be organized. Students who pass all mid term test are exempted from the written exam. Students who have collected a sufficient number of points during classes (passed both mid term test) are required to register for the exam through Studomat for the first exam period after the lecture and, depending on the result, their grade is entered in the index. Continuous student evaluation:

Continuous evaluation of students' performance

Elements of evaluating	Achievement (min.%)	Portion of the final grade (%)
Class attendance	80	10
1st Mid-term exam	50	45
2nd Mid-term exam	50	45

Grading scale:

Points (%)	Criterion	Grade
0-49	does not fulfil minimal criteria	fail (1)
50-61.9	fulfils minimal criteria	satisfactory (2)
62-74.9	Average achievement with noticeable deficiencies	good (3)
75-87.9	Above average achievement with a few deficiencies	very good (4)
88-100	Exceptional achievement	excellent (5)

Students who do not pass the mid term test during the semester, and have a signature, are required to take a written exam within the exam period. The same assessment criteria apply to the examination period as to the continuous assessment of knowledge

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Lekkerkerk, H.J, Theijs, M.J.: *Handbook of offshore surveying: Projects, Preparation and Processing, Vol. 1,* Geomares Publishing, 2012	1	Yes
Lekkerkerk, H.J, Theijs, M.J.: *Handbook of offshore surveying: Positioning and Tides,* Vol. 2, Geomares Publishing, 2012	1	Yes
Hecht, H. et.al.: *The Electronic Chart, fundamentals, functions, data and other essentials,* Geomares Publishing, 2017	1	Yes

Optional literature (at the time of submission of study programme proposal)

1. Kjerstad, N., Electronic and acoustic navigationsystems for maritime studies, 1st Edition, NTNU, Aalesund, Norway, 2016
2. IHO: M-13, Manual on Hydrography, 1st edition, International Hydrographic Bureau, Monaco, 2005
3. IHO: *Hydrographic Dictionary, Special Publication No. 32, Vol. 1, 5th Edition*, International Hydrographic Bureau, Monaco, 1994
4. IHO: *S-44, IHO Standards for Hydrographic Surveys 5th Edition*, February 2008, International Hydrographic Bureau, Monaco, 2008

	5. IHO: *S-57, IHO Transfer Standard for Digital Hydrographic Data, November 2000 - Main Document*, International Hydrographic Bureau, Monaco, 2000. 6. IHO: *S-63, IHO Data Protection Scheme, Edition 1.2.0,January 2015,* International Hydrographic Bureau, Monaco, 2015. 7. IHO: *S-65, ENCs: Production, Maintenance and Distribution Guidance, Edition 2.1.0, May 2017,* International Hydrographic Bureau, Monaco, 2017 8. IHO: *S-66, Facts about Electronic Charts and Carriage Requirements, January 2010,* International Hydrographic Bureau, Monaco, 2017.
Quality assurance methods that ensure the acquisition of exit competencies	University survey, list of student attendance, Faculty teaching supervision
Other (as the proposer wishes to add)	

4.11.10.2 Professional Practice

NAME OF THE COURSE	**PROFESSIONAL PRACTICE**					
Code	VPO139	Year of study	5th			
Course teacher		Credits (ECTS)	10			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			60	0	180	0
Status of the course	Mandatory	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	The main objective of this course for students is to acquire practical maritime (navy officer) knowledge and skills of ship handling in all conditions; acquire practical knowledge and skills of a specialist in particular profession; teach students leadership (issuing orders); gain specific proficiency needed for working on board.					
Course enrolment requirements and entry competences required for the course	/					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Applying specific knowledge and skills for working on board in all conditions, 2. Organizing crew and planning activities and exercises on board, identifying specific dangerous situations as dangerous on board (e.g., stress, alcohol, workload, distinct authority, war conditions, etc.) and analyzing characteristics of seafarers (attitude, hard work, authoritativeness, positive initiative). 3. Developing a good organizational structure of work on board a ship and developing leadership.					
Course content broken down in detail by weekly class schedule (syllabus)	**Lectures**: 1. Management structure on board, organization of duties and responsibilities on board and decision-making in emergency situations. 2. Ergonomics, designs and specific ship purposes. 3. The application of the ISM Code, watchkeeping and relieving the watch, organization of drills on board. 4. Shipboard systems, devices and equipment. 5. Life saving appliances, fire fighting systems and equipment. Ship flooding emergency procedures. 6. Ship's berthing, anchoring and towing equipment. 7. Navigation devices and equipment on board.					

	8. Communication devices and equipment on board. 9. Ship combat systems. 10. Ship power engineering systems. 11. Logistic management and maintenance of ship. 12. Naval boarding techniques. 13. Weapon handling techniques. **Exercises (Navy):** 1. Procedures of organizing the ship's crew at sea and in port according to SOLAS. 2. Emergency procedures, damage control system procedures. 3. CBRN defence of ship. 4. Ship combat system tactics, techniques and procedures. 5. Executing particular ship's tasks according to a specific naval mission. **Exercises (Ministry of the Interior – Marine police):** 1. Emergency procedures on board. 2. Naval boarding techniques. 3. Marine police tactics, techniques and procedures. 4. Coercion techniques. 5. Weapon handling techniques. 6. Integral training**.**

Format of instructions	☒ lectures ☐ seminars and workshops ☐ exercises ☐*on line* in entirety ☐ partial e-learning ☒ field work	☐ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Student obligations Mandatory 100% attendance, log keeping.	

Screening student work *(enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
Class attendance	5.5	Research		Practical training	4.5
Experimental work		Report		(Other)	
Essay		Seminar essay		(Other)	
Tests		Oral exam		(Other)	
Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

The exam is not taken. In order to obtain a signature, it is necessary to complete 100% of the planned voyage on the school ship, actively participate in the exercises, fill in the appropriate log and complete other set tasks.

Continuous evaluation of the students' performance

Elements of evaluation	Achievement (min.%)	Portion of the fin grade (%)
Class attendance	100	50
Demonstration of skills and knowledge	100	50

Required literature (available in the library and via other media)

Title	**Number of copies in the library**	**Availabilit y via other media**
Hydrographic Institute publications and nautical charts		YES
MARISEC: Bridge Procedures Guide,		YES

	IMO/ILO handbooks		YES
Optional literature (at the time of submission of study programme proposal)	Benković, F. i grupa autora: Terestrička i elektronska navigacija, Hidrografski institut RM, Split, 1986. Zec, D.: Sigurnost na moru, Pomorski fakultetu u Rijeci, Rijeka, 2001. Radulić, R. : Manevriranje brodom, Profil International d.o.o., Zagreb, 2001.		
Quality assurance methods that ensure the acquisition of exit competences	Evidence of students' attendance, evidence of professors attendance', student questionnaire		
Other (according to the proposer)			

4.11.10.3 Master Thesis

NAME OF THE COURSE	**MASTER THESIS**					
Code	VPO140	Year of study	5th			
Course teacher		Credits (ECTS)	12			
Associate teachers		Type of instruction (number of hours in a semester)	L	S	E	F
			0	0	120	0
Status of the course	Mandatory	Percentage of e-learning application				
COURSE DESCRIPTION						
Course objectives	The master thesis is an independent professional elaboration of pre-selected topic. The thesis topic can relate to a theoretical or practical or theoretical-practical area in the professional and scientific field of the study programme which has been completed. A student chooses the course within which he/she will write the master thesis. The chosen course must be included in the curriculum of the completed study programme, i.e. it must be one of the courses listed in the student's „Index" (Student Transcript Book).					
Course enrolment requirements and entry competences required for the course	/					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	- competencies and achieved results of studying when solving problems in the professional and scientific area comprised in his/her study programme - ability to apply theoretical and practical knowledge gained during the study programme - ability to apply scientific methods in the actual thesis elaboration - ability to identify relevant measurements of maritime processes - ability to apply the knowledge acquired from current foreign and domestic specialised literature in the thesis paper, i.e. to elaborate somebody else's relevant ideas, attitudes or scientific facts publicized in the literature studied - ability to search the variety of online databases - ability to process and interpret illustrations appropriately (tables, graphs, figures and drawings).					

<table>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">/</td></tr>
<tr><td>Format of instructions</td><td colspan="3">☒ lectures
☐ seminars and workshops
☐ exercises
☐on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6"></td></tr>
<tr><td rowspan="5">Screening student work (enter the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>3</td><td>Research</td><td>6</td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Writing thesis</td><td>3</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6"></td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td colspan="3">Title</td><td>Number of copies in the library</td><td colspan="2">Availability via other media</td></tr>
<tr><td colspan="3"></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="3"></td><td></td><td colspan="2"></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6"></td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6"></td></tr>
<tr><td>Other (according to the proposer)</td><td colspan="6"></td></tr>
</table>

5. CONDITIONS OF THE STUDY PROGRAMME PERFORMANCE

5.1. Study Programme Premises

The University of Split has conducted an analysis and description of the premises and equipment provided for the execution of the study programme, and demonstrated the relevant data on the location and the total study and training area. The data on specialized laboratories, practical training classrooms, computer rooms and equipment, as well as the data on the equipment necessary for scientific researches have been collected and elaborated.

The Croatian Defence Academy (hereinafter referred to as the CDA), the Department in Split, has well-equipped teaching premises, conforming with the requirements of higher education

standards. The teaching and practical training classrooms are equipped with IT and audio visual equipment, while a modern library holds the substantial number of more than 38,100 books.
In the CDA there are significant accommodation premises for all cadets enrolled in the study programme *Cadet*, as well as for other courses participants. The additional accommodation premises are being adapted and fitted out in the building No 9, and upon completion, the accommodation capacities in the CDA will meet the needs for the planned number of students.

3.1.1 Constituent buildings (include existing buildings, buildings under construction and planned construction)						
Building ID	Building location	Year of construction	Lecture hall reference number or mark	Total area in m^2	Total volume in m^3	Number of seating places for students
CDA – 5 (Amphitheatres) (Total net area 1,114 m^2)	Split, Zrinsko Frankopanska bb	1972	1	137.5	598	142
			2	103.25	445	96
			3	103.25	445	96
			5	53.75	188.13	56
			6	53.75	188.13	56

3.1.2. Constituent buildings (include existing buildings, buildings under construction and planned construction)						
Building ID	Building location	Year of construction	Number of library users	Number of titles	Number of copies	Number of seating places for students
CDA – 6 (Library) (Total net area 2,052 m^2)	Split, Zrinsko Frankopanskabb	1972	1,800	42,000	180,000	30

3.1.3. Constituent buildings (include existing buildings, buildings under construction and planned construction)						
Building ID	Building location	Year of construction	Lecture hall reference	Total area in m^2	Total volume in m^3	Number of seating places for students

			number or mark			
CDA – 7 (Dean's Office) (Total net area 1,691 m^2)	Split, Zrinsko Frankopanskabb	1972	13	63	220	30
			14	63	220	30
			15	63	220	30
			16	63	220	30
			17	93.23	326	20
			18	80.08	280	30
			19	80.08	280	20

3.1.4. Constituent buildings (include existing buildings, buildings under construction and planned construction)						
Building ID	Building location	Year of construction	Lecture hall reference number or mark	Total area in m^2	Total volume in m^3	Number of seating places for students
CDA – 8 (Foreign Language Centre) (Total net area 1,848 m^2)	Split, Zrinsko Frankopanskabb	1972	11	49.60	173	20
			12	64.40	225	20
			13	64.40	225	30
			14	64.40	225	30
			15	64.40	225	30
			16	63.40	221	30

3.1.5. Constituent buildings (include existing buildings, buildings under construction and planned construction)						
Building ID	Building location	Year of construction	Lecture hall reference number or mark	Total area in m^2	Total volume in m^3	Number of seating places for students
CDA – 8 (Practical classrooms) (Total net area 985.7 m^2)	Split, Zrinsko Frankopanskabb	1972	1	106.5	319.5	30
			2	94.5	283.5	30
			4	108.9	740.52	30
			6	130.5	887.4	30
			7	130.5	887.4	30
			10	40.96	122.88	15
			13	40.96	122.88	15
			15	68.78	206.34	20
			17	57.76	173.28	20
			18	40.95	122.85	15
			22	66.15	198.45	20
			26	98.7	671.16	30
			27	82.95	564.06	30
			28	73.7	501.16	30
			30	214.15	1,456.22	30

			31a	71.1	483.48	30
			31	168	1142.4	30
			34	94.5	642.6	30
			35	142.5	969	30
			41	32.56	113.96	10
			42	32.56	113.96	10
			43	40.96	143.36	10
			43	40.96	143.36	10

3.1.6. Constituent buildings (include existing buildings, buildings under construction and planned construction)						
Building ID	Building location	Year of construction	Lecture hall reference number or mark	Total area in m^2	Total volume in m^3	Number of seating places for students
Croatian Navy – 11 (Seamanship practical classrooms) (Total net area 728 m^2)	Split, Zrinsko Frankopanskabb	1979	6a	66	232	20
			7	72	252	20
			8	98	348	15

3.1.7.Training field for execution of practical education			
Training field ID	Training area/field internal mark	Total area in m^2	Number of working places for students
HRM Split, Zrinsko Frankopanskab b	Shipboard Damage Control training field	11,500	30
	Poljud Sports Marina	3,500	30
Brodograđevna industrija d.d. Split Put Supavla 24	Training area for seafarers' training in fire-fighting onbord ships and in confined spaces	1,500	20

5.2. List of teachers and associate lectures by courses

Course	Course teacher	Assocaite teachers
Common		
Academic writing	Luka Vukić , Ph.D.	
Applied Computer Science	Anita Gudelj, Ph. D.	Hrvoje Karna, Ph. D.
Basic Naval Principles and Practices	Dario Matika, Ph.D.	Renato Žarković
Ship construction and combat resilience	Luka Mihanović, Ph. D.	Andrija Ljulj, Ph. D.
Crisis Management at Sea	Ivica Pavić, Ph. D.	/
Electronic Warfare	Zoran Blažević, Ph. D.	Boško Jerončić Grba, M. Eng.
General tactics	Mladen Pahernik, Ph. D.	/
Graphic Drawing in Marine Engineering	Luka Mihanović, Ph. D.	Tomislav Perić
History of Naval Warfare	Ivan Matijević, Ph. D.	Zvonimir Forker
Hydroacoustics and Ship Physical Fields	Maja Škiljo, Ph. D.	Darija Jurko
Hydrographic Engineering	Ivica Pavić, Ph. D.	Jakša Mišković, M.Eng.
Maintenance Managment	Luka Mihanović, Ph. D.	Tino Sumić, M. Eng.
Military Logistic Systems Management	Luka Mihanović, Ph.D.	Jadranka Bilić, Ph.D.
Marine Electrical Engineering and Electronics I.	Danko Kezić, Ph.D.	Ivica Kuzmanić. M. Sc. Dean Sumić, M. Eng. Ante Gelo, M.Eng.
Marine Electrical Engineering and Electronics II.	Igor Vujović, Ph.D.	Dean Sumić Tomislav Peša, M.Eng.
Marine Power Systems	Nikola Račić, Ph.D.	Karlo Bratić
Maritime English I	Adelija Čulić Viskota, Ph.D.	Silvana Kokan, M.Ed.
Maritime English II	Adelija Čulić Viskota, Ph.D.	Silvana Kokan, M.Ed.
Maritime Integrated Safety and Control Systems	Ivica Pavić, Ph.D.	/
Maritime Law	Ranka Petrinović, Ph.D. Nikola Mandić, Ph. D.	
Maritime Medicine	Rosanda Mulić, Ph.D.	/
Matemathics I	Nikola Koceić-Bilan, Ph.D.	
Matemathics II	Nikola Koceić-Bilan, Ph.D.	
Matemathics III	Nikola Koceić-Bilan, Ph.D.	
Elements of Maritime Transport I	Marko Katalinić, Ph.D.	Ana Karaman, M.Eng.
Elements of Maritime Transport II	Marko Katalinić, Ph.D.	Ana Karaman , M.Eng.
Military Comunications and Information System	Antonio Šarolić, Ph.D.	Tomislav Perić, M.Eng.
Military History	Ivan Matijević, Ph.D.	Zvonimir Forker, M.A.
Military Leadership	Dario Matika, Ph.D. Luka Mihanović, Ph.D.	Mirko Šundov, Ph.D Marijan Kostanjevac, M.Sc.
Military Management	Dario Matika, Ph.D. Luka Mihanović, Ph.D.	Mirko Šundov, Ph.D Marijan Kostanjevac, M.Sc.
Military Pedagogy	Ivana Batarelo Kokić, Ph.D.	Andrija Kozina
Military Psychology	Darko Hren, Ph.D.	Katija Kalebić Jakupčević, Ph.D. Boris Milavić, Ph.D Vesna Trut, M.Sc.
Military training I	Luka Mihanović, Ph.D.	Hrvoje Šimleša
Military Training II	Luka Mihanović, Ph.D.	Hrvoje Šimleša
Military-Maritime Geography	Mladen Pahernik, Ph.D.	Mirko Šundov, Ph.D Marinko Lozančić, Ph.D. Marko Zečević, Ph.D. Jelena Petrović, Ph.D.
On-board Training I	Tino Sumić, M.Eng.	Jakša Mišković, M.Eng.
On-board Training II	Tomislav Sunko, M.Eng.	Tino Sumić, M.Eng.
Naval English I	Adelija Čulić Viskota, Ph.D. Silvana Kokan, M.Ed.	Davor Vodopija M.Ed.
Naval English II	Adelija Čulić Viskota, Ph.D.	Davor VodopijaM.Ed.

	Silvana Kokan, M.Ed.	
Physical Education	Domagoj Bagarić, M.P.Ed.	Ivica Bajaj, M.P.Ed.
Process Modelling and Simulation	Pančo Ristov, Ph.D.	/
Radio Detection Systems	Zoran Blažević, Ph.D.	Boško Jerončić Grba, M.Eng.
Safety at Sea	Ivica Pavić, Ph.D.	Tomislav Sunko, M.Eng. Jakša Mišković, M.Eng. Tino Sumić, M.Eng.
Safety Management and Risk in Shipping	Goran Belamarić, Ph.D.	
Scientific Research Methodology	Merica Slišković, Ph.D.	
Sea and Marine Environment Protection	Merica Slišković, Ph.D.	
Seamanship II	Danijel Pušić, M.Eng.	Tomislav Sunko, M.Eng. Boris Kero, M.Eng. Jakša Mišković, M.Eng. Nenad Sikirica, Andrija Ljulj, Ph.D.
Seamanship III	Lea Vojković, Ph.D.	Stipe Galić, M.Eng. Tomislav Sunko, M.Eng Filip Bojić
Seamanship I	Rosanda Mulić, Ph.D. Danijel Pušić, M.Eng.	Jakša Mišković, M.Eng. Tino Sumić, M.Eng. Vesna Majić, MD Dijana Cvitanović, MD Tomislav Sunko, M.Eng.
Ship Construction and Damage Control	Luka Mihanović, Ph.D.	Andrija Ljulj, Ph.D.
Tactical Navigation	Zvonimir Lušić, Ph.D.	Tomislav Sunko, M,Eng.
Technical MechanicsI	Zlatan Kulenović, Ph.D.	Živko Jurišić, M.Sc.Eng.
Technical Mechanics II	Damir Sedlar, Ph.D Branko Klarin, Ph.D.	Živko Jurišić, M.Sc.Eng.
Work Organisation and Management On Board	Lea Vojković, Ph.D.	Luka Mihanović, Ph.D. Jakša Mišković, M.Eng.
Master Thesis	-----	--------
Mandatory for Naval Nautical Studies		
Astronomical Navigation	Zvonimir Lušić, Ph.D.	Stipe Galić, M.Eng. Tomislav Sunko, M.Eng.
Automation in Maritime Traffic	Joško Šoda, Ph.D.	Ivan Pavić, Ana Masnov, M.Eng.
Automation of Marine Engine Systems	Danko Kezić, Ph.D.	Petar Matić, Ph. D. Tomislav Peša
Cargo Handling I	Goran Belamarić, Ph.D.	Zaloa Sanchez Varela
Cargo Handling II	Rino Bošnjak, Ph.D.	Zaloa Sanchez Varela
Electronic Navigation	Lea Vojković, Ph.D.	Filip Bojić
International Law	Vesna Barić Punda, Ph.D.	
Maritime Communications	Lea Vojković, Ph.D. Dean Sumić, M.Sc.Eng.	Tomislav Perić, M.Eng.
Maritime Meteorology and Oceanology	Nenad Leder, Ph.D.	Ivica Šantić, M.Eng.
Modern Transport Technology	Rino Bošnjak, Ph. D.	
Naval combat systems I	Dario Matika, Ph.D.	Jakša Mišković, M.Eng. Darija Jurko, M.Eng.
Naval Combat Systems II	Dario Matika, Ph.D.	Jakša Mišković, M.Eng. Darija Jurko, M.Eng.
On-board Training III	Jakša Mišković, Tino Sumić, M.Eng.	Nenad Sikirica
On-board Training IV	Jakša Mišković, M.Eng.	Tino Sumić, M.Eng.
Passage Planning	Marijan Zujić, M.Eng.	Filip Bojić

	Dario Medić, M.Sc.Eng.	
Ship Handling Technique	Dario Medić, M.Sc.Eng. Marijan Zujić, M.Eng.	Boris Kero, M.Eng.
Ship Maintenance	Luka Mihanović, Ph.D. Gorana Jelić Mrčelić, Ph.D.	Tomislav Peša, M.Eng.
Terrestrial Navigation	Zvonimir Lušić, Ph.D.	Tomislav Sunko, M.Eng.
Mandatory for Naval Engineering Studies		
Automation of Marine Engine Systems	Danko Kezić, Ph.D.	Petar Matić, Ph.D. Tomislav Peša, M.Eng.
Breakdown and Failure Diagnosis	Luka Mihanović, Ph.D.	Tino Sumić, M.Eng.
Fuels, Lubricants and Water	Luka Mihanović, Ph.D.	
Marine Auxiliary Engines and Machinery	Gojmir Radica, Ph. D. Luka Mihanović, Ph.D.	Željko Penga, Ph.D. Tino Sumić, M.Eng.
Marine Engines	Nikola Račić, Ph.D. Gojmir Radica, Ph. D.	Tino Sumić, M.Eng.
Maintenance Management	Luka Mihanović, Ph.D.	
Marine Hydraulics and Pneumatics	Đorđe Dobrota, Ph.D.	
Marine Engine Elements	Nenad Vulić, Ph.D.	Karlo Bratić
Marine Engine Systems	Ivan Komar, Ph.D.	Tino Sumić, M.Eng.
Marine Power Electronics	Danko Kezić, Ph.D.	Ivan Pavić, Ph.D. Tomislav Peša, M.Eng.
Marine Refrigerating and Air-Conditioning Systems	Zdeslav Jurić, Ph.D.	/
Naval Combat Systems	Luka Mihanović, Ph.D.	Jakša Mišković, M.Eng. Darija Jurko, M.Eng.
Navy Propulsion System	Luka Mihanović, Ph.D. Gojmir Radica, Ph.D. Nikola Račić, Ph.D.	Tino Sumić, M.Eng.
Onboard Electric Power System	Maja Krčum, Ph.D.	Marko Zubčić Tomislav Peša
Simulator and On-Board Training III	Tino Sumić, M.Eng.	
Simulator and On-Board Training IV	Tino Sumić, M.Eng.	
Strength of Materials	Marko Vukasović, Ph.D.	Milan Perkušić, Ph.D.
Technology of Materials	Dražen Živković, Ph.D. Nikša Krnić, PhD.	Zvonimir Dadić, Ph.D. Jure Krolo, mag.ing.
Thermodynamics and Heat Transfer	Zdeslav Jurić, Ph.D.	Živko Jurišić, M.Sc.Eng.
Mandatory for students of the Ministry of the Interior		
Criminal Law	Stjepan Gluščić, Ph.D.	Lana Milivojević, Ph.D.
Misdemeanour Law	Stjepan Gluščić, Ph.D.	
Police Powers and Their Application	Željko Mršić, Ph.D.	Davor Štrk, M.Sc. Hrvoje Filipović, Ph. D.
State Border Control	Stjepan Gluščić, Ph.D.	Hrvoje Filipović, Ph. D.

5.3. Curriculum vitae of the course teacher

First and last name and title of teacher	**Ivica Bajaj,M.P.Ed.**
The course he/she teaches in the proposed study programme	Physical education
GENERAL INFORMATION ON COURSE TEACHER	
Address	Vukovarska cesta 2B, Omiš
Telephone number	0981700804
E-mail address	ivica.bajaj123@gmail.com
Personal web page	
Year of birth	1966
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Republic of Croatia Ministry of Defence Armed Forces, Split
Date of employment	1.10.1998.
Name of position (professor, researcher, associate teacher, etc.)	Officer for kinesiology
Field of research	
Function	commander
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree in physical education
Institution	University of Split, Faculty of Kinesiology
Place	Split
Date	16.7.1992.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	

Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Domagoj Bagarić, professor PA**
The course he/she teaches in the proposed study programme	Physical Education
GENERAL INFORMATION ON COURSE TEACHER	
Address	Branimirova 23, Zagreb
Telephone number	00385915706268
E-mail address	domagoj.bagari@gmail.com
Personal web page	---
Year of birth	04.10.1973.
Scientist ID	---
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Lecturer, 2018
Area and field of election into research or art rank	Kinesiology, military, sport
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Ministry of Defence
Date of employment	1999
Name of position (professor, researcher, associate teacher, etc.)	lecturer
Field of research	Kinesiology, military, sport
Function	officer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master

Institution	Faculty of Kinesiology
Place	University of Zagreb
Date	1998
INFORMATION ON ADDITIONAL TRAINING	
Year	1998
Place	University of Zagreb
Institution	Faculty of Kinesiology
Field of training	Football; recreation; skiing
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English; 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German; 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Physical education, Navy, University of Split, Master
Authorship of university/faculty textbooks in the field of the course	---
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	----
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	---
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	---
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	rector's award, 1993
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	excellent

First and last name and title of teacher	**Dr. sc. Vesna Barić Punda, Full professor tenure**

The course he/she teaches in the proposed study programme	International Law, all modules
GENERAL INFORMATION ON COURSE TEACHER	
Address	Trg HBZ 3b, Split
Telephone number	+38521 480 199
E-mail address	vesnapu@pravst. hr
Personal web page	www.pravst.hr.
Year of birth	1955.
Scientist ID	133373
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor tenure, by Decision of the Senate of the University of Split from September, 25, 2012.
Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Law Split
Date of employment	
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	International Law
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctor of Science
Institution	Faculty of Law Split
Place	Split
Date	1994.
INFORMATION ON ADDITIONAL TRAINING	
Year	1995., 1997., 1999.
Place	Berlin
Institution	Freie Universitat Berlin, Department of Legal Sciences Institute for Eastern Europe
Field of training	Settlement of International Disputes, Human Rights, Law of the Sea, International Organizations
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course,	Holder and coholder of several courses at the Law, Administrative and Specialist Graduate Professional Studies of the Faculty of Law in

study programme where it is/was offered, and level of study programme)	Split, Forensics - University Department of the University of Split, Postgraduate Study of Maritime Law and Law of the Sea, Doctoral Studies and Criminology Study at the Faculty of Law in Mostar. Courses: International Law, Law of the Sea, Settlement of Disputes in International Law, International Organizations, International Treaties, Terrorism - International Legal Aspects, Human Rights.
Authorship of university/faculty textbooks in the field of the course	1. Pravo mora – dokumenti, mišljenja znanstvenika, komentari (co-authorship with Prof. Dr. Sc. D. Rudolf Jr.), Split, 2007, 954 p. 2. Rješavanje sporova u međunarodnom pravu mora - dokumenti, sudska praksa, mišljenja znanstvenika, komentari (co-authorship with Prof. Dr. Sc. D. Rudolf, Jr), Split, 2007, 393 p. 3. Komentar javnopravnih odredbi Pomorskoga zakonika (coauthorship with Prof. Dr. Sc. D. Rudolf, Jr), Split, 2010, 204 p.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. V. Đ. Degan, V. Barić Punda, Pitanje kontinuiteta RH s državama prethodnicama na njezinom području, Zbornik radova Pravnog fakulteta u Splitu, Vol.54, No. 4 , 2017. 2. V.Barić Punda, D. Juras, I. Kardum, Obalna straža RH – pravni okvir, mišljenja znanstvenika, praksa, Poredbeno pomorsko pravo – Comparative Maritime Law, god. 56, broj 171, Zagreb, 2017., str.35-60. 3. V. Barić Punda, V. Filipović, Protokol o privremenom režimu uz južnu granicu (2002.) s posebnim osvrtom na odluku vlada RH i CG o istraživanju i eksploataciji ugljikovodika u Jadranu, Poredbeno pomorsko pravo – Comparative Maritime Law, god. 54, broj 169, Zagreb, 2015, str.73-88. 4. V. Đ. Degan, V. Barić Punda, Ograničenja u vrršenju univerzalne sudbenosti (principa univerzaliteta),Zbornik radova povodom 70. godina života Berislava Pavišića (ur. M.Matulović, E. Kunštek), Pravni fakultet Sveučilišta u Rijeci, Rijeka, 2014., str.89-103).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Project- Jurisprudentia - Improvement of the Quality of Education at the Law Faculties of the Osijek, Rijeka and Split Universities, 2015 (active participation in the project expert seminar for teaching staff in order to improve the Croatian Qualifications Framework).
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Award of the Student Council of the Faculty of Law in Split, 2016.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Ivana Batarelo Kokić, Ph.D.**
The course he/she teaches in the proposed study programme	Military Pedagogy
GENERAL INFORMATION ON COURSE TEACHER	
Address	Poljička cesta 35, 21000 Split
E-mail address	batarelo@ffst.hr
Personal web page	http://marul.ffst.hr/~batarelo/dokuwiki
Year of birth	1972
Scientist ID	257575
Research or art rank, and date of last rank appointment	Scientific Advisor, 3. 12. 2017
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Professor, 22. 2. 2018
Area and field of election into research or art rank	Social sciences; Pedagogy
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Humanities and Social Sciences, University of Split
Date of employment	1.10.2008
Name of position (professor, researcher, associate teacher, etc.)	Full Professor
Field of research	Higher education
Function	Teacher
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	Arizona State University
Place	Tempe, AZ, SAD
Date	9.12.2002
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language (level 5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language (level 3)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	*Andragogy* – core course, undergraduate studies of pedagogy, Faculty of Humanities and Social Sciences, University of Zagreb *Andragogy* – core course, graduate studies of pedagogy, Faculty of Humanities and Social Sciences, University of Split
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	• Batarelo Kokić, I., & Rukavina, S. (2017). Learning from Digital Video Cases: How Future Teachers Perceive the use of Open Source Tools and Open Educational Resources. *Knowledge Cultures*, *5*(5). • Kokić, I. B., Kurz, T. L., & Novosel, V. (2016). In Kurbanoğlu, S., Špiranec, S., Grassian, E., Mizrachi, D., & Catts, R (eds.). Student Teachers' Perceptions of an Inclusive Future. In *European Conference on Information Literacy* (pp. 3-11). Springer, Cham.

	• Batarelo Kokić, I., & Kisovar-Ivanda, T. (2015). Impact of information and communications technology on education of adults with disabilities. *Školski vjesnik*, *63*(4), 501-514. • Macura Milovanović, S., Batarelo Kokic, I., Dzemidzic Kristiansen, S., Gera, I., Ikonomi, E. Kafedzic, L., Milic, T., Rexhaj, X., Spasovski, O., and Closs, A. (2014). Dearth of early education experience: a significant barrier to subsequent educational and social inclusion in the Western Balkans. *International Journal of Inclusive Education, 18*(1), 1-19. • Batarelo Kokić, I., Nevin, A., & Malian, I. (2013). Facilitation of multi-dimensional learning and teaching through an online teacher education course. *Croatian Journal of Education, 15*(2), 491-519.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	• Kurz, T. L., Batarelo Kokić, I. (2014). Predilections on requisite pedagogical Content for mathematics and science video cases. *Technology, Instruction, Cognition and Learning, 9*(4), 275-293. • Kurz, T. L., Batarelo Kokić, I. (2012). Designing and incorporating mathematics-based video cases highlighting virtual and physical tool use. *Journal of Digital Learning in Teacher Education, 29*(1), 23-29. • Batarelo Kokić, I., Rukavina, S. (2011). Primjena suradničkog učenja u hibridnom okruženju. *Život i škola, 25*(1), 24-34. • Batarelo Kokić, I., Šimić, M. (2011). Evaluation of Educational Software for the Gifted Students. *ITRO: a journal for information technology, education development and teaching methods of technical and natural sciences, 1*(1), 14-19.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	• Undergraduate study (Pedagogy, Faculty of Humanities and Social Sciences, University of Zagreb) • Master studies (Educational Media and Computers, Arizona State University, USA) • Doctoral studies (Interdisciplinary PhD in Curriculum and Instruction, Arizona State University, USA)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	• DAAD Fellowship (KMRC, Tuebingen; 2005.-2006.) • Graduate Academic Scholarship (Arizona State University; 2000.-2001.)

First and last name and title of teacher	**Goran Belamarić, Ph.D.**
The course he/she teaches in the proposed study programme	Cargo Handling I, Safety management and Risk in Shipping
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 37, 21000 Split, Croatia
Telephone number	+385 21 619-435
E-mail address	goran.belamaric@pfst.hr
Personal web page	NIL

Year of birth	9th August 1956
Scientist ID	356022
Research or art rank, and date of last rank appointment	10th January 2018 Assistant Professorat the Faculty of Maritime Studies Split
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	17th October 2017 Associated Scientific in election process for Associate Professoron Maritime Studies Split
Area and field of election into research or art rank	Area of technical sciences, field of traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st August 2008
Name of position (professor, researcher, associate teacher, etc.)	Assistant Professor, Scientific researcher
Field of research	education and science, nautical engineering
Function	Training Centre Manager
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD in the field of Maritime Transport, area of technical sciences, field of traffic and transport technology
Institution	University of Rijeka, Faculty of Maritime Studies
Place	Rijeka
Date	11th December 2015
INFORMATION ON ADDITIONAL TRAINING	
Year	2018
Place	Bilbao, Spain, EU
Institution	University of the Basque Country Universidad del Pais Vasco Faculty of Nautical Studies of Bilbao
Field of training	nautical engineering
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	**English language:** Listening (C2), Reading (C2), Writing (C2); Speaking: Spoken interaction (C2) and Spoken production (C2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	**Italian language:** Listening (A2), Reading (A2), Writing (A2); Speaking: Spoken interaction (A2) and Spoken production (A2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	NIL
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Total thirty (30) years of work in the maritime sector in the period from 1975 to 2005: In total 20 years of active long sea service experience: • As a Deck Officer served total 10 years active long sea service in period from July 1975 to July 1987; • As the Master of the ship served total 10 years active long sea service in period from 1st August 1987 when promoted in capacity of the Ship Captain (Master of the ship) since June 2005; Long sea service experience as a Master "Navigation in ice" (Northern Canada and Belle Isle up to Murmansk) in the period from 1995 to 2001. **PROFESSIONAL COMPETENCE** **Certificates of Competency (COC)** • MASTER of the Ship of a 3000 GT or more (Unlimited);

- GMDSS Operator (General Operator Certificate - Unlimited);

FOREIGN FLAG STATE DOCUMENTS
(***Certificates of Competency - COC***)

- BRITISH (UK) MASTER CEC 0003100
- (UK Master Certificate of Competence)
  - As holder of UK LAP1 (United Kingdom Legal Administration Procedure-1) authorised Examiner for UK LAP2 UK Certificate of Competence
- BRITISH (U.K.) GMDSS GOC 050007021
- UK MCA (United Kingdom Maritime & Coastguard Agency) "Marlins" English Language Test - 97% passed

AUTHORIZED INSTRUCTOR

- **Authorized INTERSCHALT Instructor forLoading Computer Software MACS3.net for:**
  1. Basic Program MACS3.net;
  2. MixCargo (including the Container Program BELCO) - Container Handling and Stowage;
  3. Program for Dangerous Goods: **DAGO I, DAGO II, DAGO II**
  4. Hazardous Materials Handling and Stowage;
  5. **SEALASH** + Additional Module:
     - Tankplan, Grain, Bulklim, LoadMan, DastyMAN, Ullage, Multi-Voyage Module;
  6. RoRo;
  7. Passenger vessel.

- **Authorized TRANSAS Instructor for:**
  1. NTPRO 5000 Simulator, ECDIS, ICE Nav., AIS, SAR, ANTY PIRACY (as per ***IMO Model Course 6.09***);
  2. ECDIS NS4000;
  3. PISCES II;
  4. Model Wizard 6.0;
  5. VTS/GMDSS;
  6. Liquid Cargo Handling Simulators (***LCHS 5000***);
  7. DP & AH Simulator (as per ***IMO Model Course 5.25***).

Certificates:

1. Radar Observer &. A.R.P.A. Radar;
2. Search and Rescue;
3. Fire Prevention and Fire Fighting;
4. Advanced Fire Fighting;
5. Medical First Aid and Medical Care;
6. Proficiency in Survival Craft and Rescue Boats;
7. Proficiency in Fast Rescue Boats;
8. Dangerous Cargo Handling (***IMDG***);
9. Oil Tanker Familiarisation;
10. Bridge Team Management (***BTM***);
11. Bridge Resource Management (***BRM***);
12. Maritime Crew Resource Management (***MCRM***);
13. Ship Simulator and Bridge Teamwork (***SSBTW***);
14. Ship Security Officer (***SSO***);
15. Large Ship Handling and Manoeuvring;
16. The Operational Use of Electronic Chart Display and Information Systems (***ECDIS***);
17. Passage Planning Instructor;
18. Risk Management & Accident Investigation and Analysis;

	19. Safety Management System Familiarization Training 20. Safety & Security Awareness; 21. Marine Environmental Awareness; 22. Ships Inventory & Planned Maintenance.
Authorship of university/faculty textbooks in the field of the course	Two (2) academic handbooks and a textbook, University of Zadar, Nautical Department
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Latest update for all above numerated additional information can be found on the following link - "Centar za znanstvene informacije - IRB" (CROSBI): https://bib.irb.hr/lista-radova?autor=356022
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Latest update for all above numerated additional information can be found on the following link - "Centar za znanstvene informacije - IRB" (CROSBI): https://bib.irb.hr/lista-radova?autor=356022
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	As a Master of the ship nominated for the *Blue Ribbon Herald* 1990 for extraordinary rescue of sailors at sea for help and salvage at sea in 1988

First and last name and title of teacher	**Zoran Blažević, Ph.D.**
The course he/she teaches in the proposed study programme	Radio Detection Systems, Electronic Warfare
GENERAL INFORMATION ON COURSE TEACHER	
Address	Tolstojeva 47, Split, Croatia
Telephone number	+38521305676
E-mail address	zblaz@fesb.hr
Personal web page	https://nastava.fesb.unist.hr/nastava/nastavnici/detalji/zblaz
Year of birth	1968
Scientist ID	238956
Research or art rank, and date of last rank appointment	Scientific Adviser, 20/06/2016
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 16/07/2016
Area and field of election into research or art rank	Technical Sciences, Electrical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	June 1, 2016

Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Electrical Engineering
Function	High education and research
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	May 30, 2005
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 4/5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Radio-communications, Radars, Mobile Communications, Measurements in Wireless Systems, Satellite Positioning Systems; at Graduate study of Communications and Information Technology, and at former Telecommunication Course at University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, master level
Authorship of university/faculty textbooks in the field of the course	Radiokomunikacijehttps://elearning.fesb.unist.hr/mod/resource/view.php?id=19355 Mikrovalnaelktronika https://elearning.fesb.unist.hr/mod/resource/view.php?id=33727
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Skiljo, Maja; Blazevic, Zoran; Poljak, Dragan Indoor Channel Characterization for GPR ElectromagneticCompatibility// Proceedingsof 2019 International Conference on Software, Telecommunicationsand Computer Networks (SoftCOM) Split, 2019. str. 1-5 doi:10.23919/SOFTCOM.2019.8903675 (predavanje, međunarodna recenzija, cjeloviti rad (inextenso), znanstveni)

	Blažević, Zoran; Škiljo, Maja ResonantNear-field Power Transfer: revisitingthefrequency-splittingphenomenonusingthespherical mode theoryantenna model. // IEEE antennas&propagation magazine, 61 (2019), 08750777, 9 doi:10.1109/MAP.2019.2920102 (međunarodna recenzija, članak, znanstveni) Škiljo, Maja; Konsa, Toni; Blažević, Zoran; Poljak, Dragan Antenna Design for Low-Cost Laptop-basedGroundPenetrating Radar// SpliTech 2018 / Šolić, Petar (ur.). Split, 2018. str. 1-4 (predavanje, međunarodna recenzija, cjeloviti rad (inextenso), znanstveni) . Škiljo, Maja; Sanader, Željko; Blažević, Zoran Wi-Fi Signal Measurementsin Building Surroundings // RecentAdvancesin Communications andNetworking Technology, 7 (2018), 2; 1-6 doi:10.2174/2215081107666180409124917 (međunarodna recenzija, članak, znanstveni) Škiljo, Maja; Blažević, Zoran; Poljak, Dragan Ultra-wideband ParabolicBiconeAntenna for GroundPenetrating Radar// 2015 International Conference on Software, Telecommunicationsand Computer Networks / Rožić, Nikola ; Begušić, Dinko (ur.). Split, 2015. (predavanje, međunarodna recenzija, cjeloviti rad (inextenso), znanstveni)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Best scientific paper Mipro 2005
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the	Radiocommunications 2020: 5.0 (+-0.1) 2019 5.0 (+-0.0) 2018: 5.0 (+- 0.0) 2017: 4.6 (+-0.7) 2016: 5.0 (+- 0.1)

form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Rino Bošnjak, Ph.D.**
The course he/she teaches in the proposed study programme	Crago Handlonh II, Modern Transport Technology
GENERAL INFORMATION ON COURSE TEACHER	
Address	141 brigade 20 Street
Telephone number	098363968
E-mail address	rino.bosnjak@pfst.hr
Personal web page	
Year of birth	1975
Scientist ID	328504
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor 2018
Area and field of election into research or art rank	Area of technical sciences, filed of traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st April 2011
Name of position (professor, researcher, associate teacher, etc.)	teaching/research assistant
Field of research	technology of liquid cargo, modern transport technologies , e-navigation and autonomous ships; ergonomics of navigation subsystems
Function	Deputy of Training Centre Manager
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master of Maritime Engineering
Institution	Faculty of Maritime Studies in Split
Place	Split
Date	26th January 2000
INFORMATION ON ADDITIONAL TRAINING	
Year	from 2000 until 2011
Place	Ship and abroad
Institution	ER Schiffahrt and GearBulk
Field of training	Master Mariner
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years	1. Bošnjak, R.; Kezić, D.; Vidan, P.; Metodologija sinteze nadzornika pomoću vremenskih Petrijevih mreža Shipbuilding :

in the field of the course (5 works at most)	Theory and Practice of Naval Architecture, Marine Engineering and Ocean Engineering. Vol 68 (2017) , Number 3; 57-66 (paper, scientific). 2. Bošnjak, R.; Belamarić, G.; Autonomous Ships, Kapetanov Glasnik, Vol 35 (2018), professional article. 3. Bošnjak, R.; Belamarić, G.; Pavić, I.; Ristov, P.; Analiza karakteristika i operacija kod upotrebe pomorskih azimutalnih kontrolnih uređaja, KOREMA 2018, international conference, scientific paper. 4. Bošnjak, R.; Paradžik, I.; Brodovi za prijevoz komprimiranog prirodnog plina i CNG tehnologija: Kapetanov glasnik, Vol 36 (2019), 10-16. (paper, professional). 5. Bošnjak, R.; Živković, V.; Brodovi za prijevoz ukapljenih plinova: Kapetanov glasnik **Vol 34** (2018),; 33-40 (paper, professional).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Lecturer on courses Ergonomics of Navigation Subsystem, Modern Transport Technologies, Liquid Cargo Transport Technology and Fundamental Safety.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Adelija Čulić-Viskota, Ph.D.**
The course he/she teaches in the proposed study programme	Maritime English I Maritime English II Naval English I Naval English II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 37
Telephone number	+385(0)913807032
E-mail address	adelija@pfst.hr
Personal web page	
Year of birth	1960
Scientist ID	278400
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior lecturer, 2019
Area and field of election into research or art rank	Humanities, linguistics, anglistics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	01/03/1993
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Teaching
Function	Head of Chair for Foreign Languages
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Zagreb, Faculty Humanities and Social Sciences
Place	Zagreb
Date	08/11/2008
INFORMATION ON ADDITIONAL TRAINING	
Year	2005 – MEITC (Mar. Eng. Instructors' Training Course)
Place	Sczeczin
Institution	Maritime University
Field of tranining	Maritime English
	2017
	Frankfurt
	elc– European LanguageCompetence Training Consulting Frankfurt a.M.
	Intercultural competence in English
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (5)

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Maritime English PEIT-Graduate Maritime English I and II PN Maritime English I, II, III, IV, V, VI PTJM
Authorship of university/faculty textbooks in the field of the course	Engleski jezik, teaching materials for students of PTJM
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Moennigmann, Bernd; Čulić-Viskota, Adelija. Standardised English Language Proficiency Testing for Seafarers. // Transactions on Maritime Science. 6 (2017), 2; 147-154 (paper, professional). 2. Čulić-Viskota, Adelija; Maciej Denc. From Content Centeredness to Learner-Centeredness in Teaching English for Specific Purposes. // Transactions on Maritime Science. 5. (2016), 2; 172-178 (paper, professional). 3. Čulić-Viskota, Adelija. Investigation into Multicultural Readiness of Maritime Students: A Maritime English Lecturer's View. // Transactions on Maritime Science. Vol.07 (2018), No.01; 84-94 (paper, scientific).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Courses in methodology and glotodidactics during the studies; MEITC (Maritime English Instructor's Traning Course), Sczeczin 2005.
PRIZES AND AWARDS	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Đorđe Dobrota, Ph.D.**
The course he/she teaches in the proposed study programme	Marine Hydraulics and Pneumatics
GENERAL INFORMATION ON COURSE TEACHER	
Address	Mosorska cesta 3, Omiš
Telephone number	098/9903948
E-mail address	ddobrota@pfst.hr

Personal web page	
Year of birth	15th January 1963
Scientist ID	322351
Research or art rank, and date of last rank appointment	Assistant Professor – 8th May 2019
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Lecturer - 31st May 2015
Area and field of election into research or art rank	Area of technical sciences, filed of traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	29th April 2010
Name of position (professor, researcher, associate teacher, etc.)	Lecturer
Field of research	Mechanical engineering - marine engineering
Function	Lecturer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	29th January 2019
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language - 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Mechanisms and Vibrations Undergraduate study Marine Engineering
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Ban, Dario; Bašić, Josip; Dobrota, Đorđe: Split TSHD Hydrostatic Particulars Calculation for Cargo Discharge Phase using Polynomial RBF, Journal of Marine Science and Application, Vol.16 (2017), p. 137-158. Vulić, Nenad; Dobrota, Đorđe; Komar, Ivan: Damping and excitation in the torsional vibrations calculation of ship propulsion systems, Conference Proceedings, Contemporary Issues in Economy & Technology, CIET 2016, p. S-165, Split/Croatia, June 2016.
Professional and scholarly articles published in the last five years in	

subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Nove tehnologije u dijagnostici i upravljanju brodskih porivnih sustava (New Technologies in the Diagnosis and Management of Marine Propulsion Systems) (250-2502209-2364)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Zvonimir Forker, M.A.**
The course he/she teaches in the proposed study programme	- Military History - History of Naval Warfare
GENERAL INFORMATION ON COURSE TEACHER	
Address	Priora Petra 5, 21000 Split
Telephone number	091 529 3812
E-mail address	zforker@ffst.hr
Personal web page	
Year of birth	1981.
Scientist ID	374520
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Humanities and Social Sciences, University of Split
Date of employment	01. 01. 2019.
Name of position (professor, researcher, associate teacher, etc.)	teaching/research assistant
Field of research	Ancient history
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master's degree in History and Archaeology
Institution	Faculty of Humanities and Social Sciences in Zadar, University of Split
Place	Zadar
Date	2006.
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	

The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Study of History, Faculty of Humanities and Social Sciences in Zadar, University of Split

First and last name and title of teacher	**Ante Gelo, M.Eng.**
The course he/she teaches in the proposed study programme	Marine Electrical Engineering and Electronics I.
GENERAL INFORMATION ON COURSE TEACHER	
Address	Kupreška 14, Split
Telephone number	0918863642
E-mail address	ante.gelo@morh.hr
Personal web page	
Year of birth	1978
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant, March 1st 2020.
Area and field of election into research or art rank	Electrotechnics, Electronics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Ministry of defence
Date of employment	01.9.2004.
Name of position (professor, researcher, associate teacher, etc.)	Associate teacher
Field of research	Information and communication systems, Maritime Surveillance
Function	Staff officer, Navy Command
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Zagreb
Date	February 23rd 2007.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Upgrade of maritime surveillance sensors 2. Upgrade of communications and information systems 3. Examination of Patrol ship equipment
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Stipe Galić, M.Eng.**
The course he/she teaches in the proposed study programme	Seamanship III Astronomical Navigation
GENERAL INFORMATION ON COURSE TEACHER	
Address	Trg Ivana Raosa 3
Telephone number	098/919 28 17
E-mail address	stipe.galic@pfst.hr
Personal web page	
Year of birth	1981
Scientist ID	332001
Research or art rank, and date of last rank appointment	Lecturer – teaching rank

Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Lecturer 16th December 2016
Area and field of election into research or art rank	maritime transport
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split- Faculty of Maritime Studies
Date of employment	28th September 2011
Name of position (professor, researcher, associate teacher, etc.)	teacher
Field of research	maritime transport
Function	teacher at the undergraduate level
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree in Marine Engineering
Institution	University of Split Faculty of Maritime Studies
Place	Split
Date	
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	Split
Institution	University of Split Faculty of Maritime Studies
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, 5 (excellent)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Three years of experience working on a ship (3), five years (5) of experience at the Faculty of Maritime Studies as a teaching/research assistant teaching professional courses and three years of experience working as a lecturer.
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	• Bukljaš Skočibušić, Mihaela; Galić, Stipe; Vidan, Pero Overview of the Vessel Traffic System in the Republic of Croatia // Management Perspective for Transport Telematics / Mikulski, Jerzy (ur.). Krakov, Poljska: Springer Verlag, 2018. p. 380-394 doi:10.1007/978-3-319-97955-7_26 (lecture, review, in extenso, professional) • Stanivuk, Tatjana; Galić, Stipe; Tomović, Nena; Kordić, Biljana Svjetionici jadrana - sigurnost plovidbe i/ili robinzonski turizam // 38th Conference on Transportation Systems with International Participation AUTOMATION IN TRANSPORTATION 2018 / Šakić, Željko (ur.). Zagreb: KoREMA, 2018. p. 53-56 (lecture, international review, in extenso, scientific) • Stanivuk, Tatjana; Relja, Ajka; Galić, Stipe; Šalov, Ivan

	Modeliranje brodske ravnoteže i njihanja nastalog utjecajem morskih valova // XV Međunarodno savjetovanje „Saobraćajni, ekološki i ekonomski problemi i perspektive rješavanja u zemljama zapadnog Balkana s osvrtom na Bosnu i Hercegovinu" / Jusufranić, Jasmin ; Imamović, Mirsad (ur.). Travnik: Internacionalni univerzitet Travnik u Travniku, 2017. p. 352-360 (lecture, international review, in extenso, scientific) • Stanivuk, Tatjana; Galić, Stipe; Bojanić, Mia Mathematics as a Science and Marine Activity Follow Each Other Throughout History // Transactions on Maritime Science, 6 (2017), 1; 55-60 doi:10.7225/toms.v06.n01.006 (international review, paper, scientific) • Galić, Stipe; Stanivuk, Tatjana; Marušić, Ana Development, analysis and prediction of efficiency of bulk carriers in the world market // Transport Infrastructure and Systems / Dell'Acqua, Gianluca ; Wegman, Fred (ur.). Rim: CRC Press/Balkema, 2017. p. 883-890 (lecture, international review, in extenso, scientific)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Stjepan Gluščić, Ph.D.**
The course he/she teaches in the proposed study programme	Criminal law Misdemeanour law State border control
GENERAL INFORMATION ON COURSE TEACHER	
Address	Avenija Gojka Šuška 1
Telephone number	
E-mail address	sgluscic@fkz.hr
Personal web page	
Year of birth	1962
Scientist ID	239261
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	research associate 24.02.2015 assistant professor

Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Police college
Date of employment	1995
Name of position (professor, researcher, associate teacher, etc.)	Head of department
Field of research	Criminal law, police powers, human righs
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D. of criminal science
Institution	Pravni fakultet Zagreb
Place	Zagreb
Date	20011
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Fundamentals of Criminal Law, Military Studies Zagreb Criminal Procedure Law, Professional Study in Criminalistics College of Police Zagreb Criminal Procedure Practicum, Criminalistics Specialist Study Program, College of Police Zagreb Police Law, Faculty of Law in Mostar
Authorship of university/faculty textbooks in the field of the course	1. Đurđević Z., Gluščić S., Ivičević Karas E., Josipović I., Novoselec H.: (2014) : Kazneno procesno pravo: Primjerovnik, V izmijenjeno i dopunjeno izdanje; Narodne novine Zagreb, ISBN 978-953-234-175-1 (udžbenik, st. 257), urednici: Đurđević Z., Gluščić S. (str. 45. – 77), 2. Veić P., Gluščić S.: (2013.) Prekršajno pravo: opći dio, Narodne novine Zagreb, ISBN 9789532341188, (udžbenik str. 243.), (str. 103. – 147., 160.- 210., 220.- 243.), 3.Tomašević, G; Krapac, D.; Gluščić, S.; (2016) Kazneno procesno pravo: Udžbenik za visoke škole, Narodne novine, Zagreb ISBN 978-953-234-234-5 (str. 362),
Professional, scholarly and artistic articles published in the last five	1. Gluščić, S., Kondor-Langer, M. (2019). Istraživanje socioekonomskog statusa osumnjičenika i njegovog prava na

years in the field of the course (5 works at most)	branitelja u svjetlu Direktive (EU) 2016/1919 - Hrvatski ljetopis za kaznene znanosti i praksu; 2. Kondor-Langer, M., Gluščić, S. (2019). CERTAIN WAYS OF PROVING THE CRIMINAL OFFENCE OF AGGRAVATED LARCENY, WITH SPECIAL REFERENCE TO THE SUSPECT'S INTERROGATION PURSUANT TO ARTICLE 208A OF THE CODE OF CRIMINAL PROCEDURE, EU and comparative law issues and challenges serie (ECLIC 3), 600-622, dostupno na: https://www.pravos.unios.hr/download/eclic-3.pdf 3. Klier, D., Kondor-Langer, M., Gluščić, S. (2018). Policijska i državnoodvjetnička praksa u ispitivanju osumnjičenika, u: Hrvatski ljetopis za kazneno pravo i praksu, vol. 25 (2), 447. – 475. – prethodno priopćenje. ISSN 1330-6286, e-ISSN 1847-263X 4. Gluščić, S., Kondor-Langer, M. (2018). The Impact of Amendments and Supplements to the Criminal Procedure Law in determining, discussing, and proving the General Criminality Offenses, Zbornik radova, str. 449-467. ISSN (Online) 2459-9425, objavljeno i na: https://hrcak.srce.hr/ojs/index.php/eclic/article/view/7121/4612 5. Pavić, K., Gluščić, S.: Odnos policije i državnog odvjetništva prema VII. Noveli ZKP, HLJKPP br. 2/2017 (str. 483. – 498.).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	• Impact of amendments to the Criminal Procedure Act on the detection, clarification and proving of crimes in the field of general crime. • Some features of the disappearance of persons in the territory of the Republic of Croatia. • Impact of various factors on road safety. • Croatia's judicial cooperation in criminal matters in the EU and the region: the legacy of the past and the challenges of the future.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Faculty of Teacher Education in Zagreb, Additonal program in pedagogical and didactic field (1995)
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course	2017/2018 – 4,78 2018/2019 – 4,78

described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Anita Gudelj, Ph.D.**
The course he/she teaches in the proposed study programme	Applied Computer Science
GENERAL INFORMATION ON COURSE TEACHER	
Address	Velebitska 58, Split
Telephone number	913807023
E-mail address	anita@pfst.hr
Personal web page	
Year of birth	1970
Scientist ID	278411
Research or art rank, and date of last rank appointment	Scientific advisor 6th June 2019
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor 14th December 2016
Area and field of election into research or art rank	scientific area of social sciences - field of information and communication sciences – branch information systems and informatology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st March 1997
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Information systems and informatology
Function	Chair of Quality Assurance Board, ECTS coordinator
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Zagreb, Faculty of Organisation and Informatics
Place	Varaždin
Date	2nd December 2010
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	The application of electronic computers 1, The application of electronic computers, Nautical Studies, undergraduate study programme
Authorship of university/faculty textbooks in the field of the course	The application of electronic computers, textbook
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Krčum, M., Zubčić, M.; Gudelj, A. (2018), A Review and Comparison of Ship Power Simulation Methods. Naše more, Vo. 65. No.4 pp. 284-288. 2. Kavran, N.; Gudelj, A.; Medić, D. (2018) Petri Net Model for Drone Search and Rescue Actions at Sea. Advances in Decision Technology and Intelligent Information Systems, Volume XIX, Tecumseh, Canada: The International Institute for Advanced Studies (IIAS), pp. 30-35 3. Radmilo, I., Gudelj, A., Ristov, P. (2017) Information security in maritime domain. International Maritime Science Conference, Book of Proceedings, Faculty of Maritime Studies Split , pp. 76-82. 4. Gudelj, A.; Krčum, M.; Balić, A. (2016) Primjena excel proračunskih tablica i VBA u obrazovanju pomoraca. Zbornik radova 36. skupa o prometnim sustavima s međunarodnim sudjelovanjem: Automatizacija u prometu 2016. 5. Čorić, M.; Gudelj, A.; Lušić, Z. (2016) Classified Vector Quantization and its Application on Compression of Iris Images in the Safety of Marine Systems // Promet - Traffic & Transportation, 28 2; 125-131.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Mathematics and Informatics, University of Split, Fakultet prirodoslovno-matematičkih znanosti i odgojnih područja u Splitu, teacher of mathematics and informatics
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Darko Hren, Ph.D.**
The course he/she teaches in the proposed study programme	Military Psychology
GENERAL INFORMATION ON COURSE TEACHER	
Address	Rendićeva 33, 21000 Split
Telephone number	0915001173
E-mail address	dhren@ffst.hr
Personal web page	-
Year of birth	1973
Scientist ID	277083
Research or art rank, and date of last rank appointment	Higher scientific collaborator (17.5.2019.)
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor (25.9.2019.)
Area and field of election into research or art rank	Interdisciplinary field of science - educational sciences (psychology, pedagogy)
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Humanities and Social Sciences, University of Split
Date of employment	1.4.2009.
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	research on research (meta-research), education
Function	-
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Humanities and Social Sciences, University of Zagreb
Place	Zagreb
Date	20.10.2008.
INFORMATION ON ADDITIONAL TRAINING	
Year	1998-2002
Place	Zagreb
Institution	Institute for Integrative Gestalt Therapy Würzburg
Field of training	Gestalt psychotherapy
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Social psychology (Sociology - undergraduate; Pedagogy - graduate) Psychology of Motivation and socialization in the Classroom (Pedagogy - graduate; Teacher Education - integrated undergraduate and graduate); Effective Communication (Pedagogy - graduate); Introduction to Scientific Literacy (Pedagogy - undergraduate) Introduction to Qualitative Methods in Education (Pedagogy - graduate) Psychology of teaching and learning (Pedagogy - undergraduate; Teacher Education - integrated bachelor and graduate) Study Skills (Pedagogy - undergraduate); Introduction to Scientific Literacy (Pedagogy - undergraduate); Basic Statistics for Linguists (Humanistic Sciences - postgraduate) Statistical Analysis in Practice (Humanistic Sciences - postgraduate)

	Quasiexperimental and Nonexperimental Study Designs (Translational Research in Biomedicine and Epidemiology - postgraduate)
Authorship of university/faculty textbooks in the field of the course	Hren, D. (2016) *Interpretation of results*. U Marušić, M. (ur.) Principles of Research in Medicine (2nd edition). Zagreb: Medicinska Naklada
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Scientist-in-Charge **Methods in Research on Research** (MiRoR; Marie Slodowska Curie Actions, **Horizon 2020**, Innovative Training Networks) (http://miror-ejd.eu/
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Gorana Jelić Mrčelić, Ph.D.**
The course he/she teaches in the proposed study programme	Ship Maintenance
GENERAL INFORMATION ON COURSE TEACHER	
Address	Vukovarska 57, Split
Telephone number	913806998
E-mail address	gjelic@pfst.hr
Personal web page	
Year of birth	1973
Scientist ID	252566
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Professor 28th November 2019
Area and field of election into research or art rank	Biotechnical sciences, agriculture, ecology and environmental protection
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st June 1996
Name of position (professor, researcher, associate teacher, etc.)	Full Professor
Field of research	ecology and environmental protection
Function	Vice Dean for development and international cooperation
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Zagreb, Faculty of Agriculture
Place	Zagreb

Date	26th November 2004
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French language, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Undergraduate study programme Maritime Management: Maritime History Undergraduate study programme Marine Engineering: Corrosion and Material Protection Undergraduate study programme Nautical Studies: Ship Maintenance Graduate study programme Maritime Management, Marine Engineering, Nautical Studies: Marine Technologies Graduate study programme Maritime Management, Marine Engineering, Nautical Studies: Integral Coastal Zone Management
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Čampara, Leo; Slišković, Merica; Jelić Mrčelić, Gorana. 2019. Key Ballast Water Management Regulations with a View on Ballast Water Management Systems Type Approval Process. Naše more 66(2) 2. Jelić Mrčelić, Gorana; Penović Buble, Martina; Žanić Mikuličić, Jelena. 2018. Integrated Coastal Zone Management in the Republic of Croatia, Conference Proceedings ICTS 2018 - The 18th International Conference on Transport Science, Portorož, Slovenija, 14-16 June 2018. 3. Slišković, Merica; Ukić Boljat, Helena; Jelaska, Igor; Jelić Mrčelić, Gorana. 2018. Review of Generated Waste from Cruisers: Dubrovnik, Split, and Zadar Port Case Studies. Resources, 7(4) 4. Vorkapić, Aleksandar; Komar, Ivan; Jelić Mrčelić, Gorana. 2016. Shipboard ballast water treatment systems on seagoing ships. Transactions on Maritime Science, 5(1) 5. Slišković, Merica; Jelić Mrčelić, Gorana; Ukić, Helena. Marine litter pollution from nautical tourism in the Adriatic Sea. The 7th International Conference on Maritime Transport, 27.-29. June, 2016, Barcelona, Spain, 2016.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	

The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Zdeslav Jurić, Ph.D.**
The course he/she teaches in the proposed study programme	Marine Refrigerating and Air-Conditioning Systems Thermodynamics and Heat Transfer
GENERAL INFORMATION ON COURSE TEACHER	
Address	Iločka 5
Telephone number	0
E-mail address	zdeslav@pfst.hr
Personal web page	www.pfst.hr/~zjuric
Year of birth	1974
Scientist ID	276782
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant professor, 10 May 2016
Area and field of election into research or art rank	Technical sciences, marine engineering, process power engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	04/01/2002
Name of position (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Process power engineering
Function	Vice-Dean for Student and Academic Affairs
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	2/23/2011
INFORMATION ON ADDITIONAL TRAINING	
Year	2011
Place	Zagreb
Institution	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture
Field of tranining	Measures for power efficiency on board ships
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English - 3

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Thermodynamics and heat transfer; Marine engineering; undergraduate study Technical mechanics; Marine Yacht and Marina Management Technologies, Maritime Management, Nautical Studies; undergraduate studies Ship's refrigerating and air-conditioning plants; Marine Engineering, undergraduate study
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	○ Bratić, K.; Stazić, L.; Mišura, A.; Jurić, Z.: „ Spare Parts Optimization Using A Planned Maintenance System, 8th International Maritime Science Conference (lecture,international review,published paper, scientific) ○ Jurić, Z.; Račić, N.; Dobrota, Đ.: „Thermodynamic Analysis of Onboard Compressed Air Supplied System,17th International Conference on Transport Science – ICTS 2015, Portorož, Slovenija (lecture, international review, published paper, scientific).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Živko Jurišić, M.Sc.Eng.**
The course he/she teaches in the proposed study programme	Technical mechanics I, Technical mechanics II, Thermodynamics and Heat Transfer
GENERAL INFORMATION ON COURSE TEACHER	
Address	Dinka Šimunovića 9, Split
Telephone number	0959095290
E-mail address	zivko.jurisic2015@gmail.com; zivko.jurisic@morh.hr
Personal web page	
Year of birth	1969.
Scientist ID	/
Research or art rank, and date of last rank appointment	/

Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant, 07.01.2020.
Area and field of election into research or art rank	Technical sciences, Mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Ministry of Defense, Croatian Navy
Date of employment	05.01.1998.
Name of position (professor, researcher, associate teacher, etc.)	Support department, Croatian Navy Fleet
Field of research	Logistics
Function	Head of the logistics
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Masterof Science in Engineering
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	September 28th 2012.
INFORMATION ON ADDITIONAL TRAINING	
Year	1) 2017. 2) 2019.
Place	1) Split 2) Zagreb
Institution	1) FESB Split, 2) Croatian Defence Academy "Dr. Franjo Tuđman"
Field of training	1) PhD student, Mechanical engineering, Welding technology 2) Logistics, Functional officer's education, 3rd level
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	/
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	/
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	/
Authorship of university/faculty textbooks in the field of the course	/
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	/
Professional and scholarly articles published in the last five years in	/

subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	/
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	/
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	/
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split, Student evaluation of academic work winter semester 2019/2020.- average 4,8 (maximum 5)

First and last name and title of teacher	**Darija Jurko,M.Eng.**
The course he/she teaches in the proposed study programme	Hydroacoustics and Ship's Physical Fields Naval Combat System I Naval Combat system II Navala Combat Systems
GENERAL INFORMATION ON COURSE TEACHER	
Address	Pujanke 28, 21000 Split, Croatia
Telephone number	+385 99 434 7377
E-mail address	dgvozden@morh.hr
Personal web page	/
Year of birth	1975.
Scientist ID	/
Research or art rank, and date of last rank appointment	/
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	/
Area and field of election into research or art rank	Engineering (Technical Science), Electrical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Croatian Defence Academy - Split
Date of employment	01.01.2018.
Name of position (professor, researcher, associate teacher, etc.)	Associate teacher
Field of research	Systems Engineering
Function	Maritime Operations teacher
INFORMATION ON EDUCATION – Highest degree earned	

Degree	Master degree in Engineering
Institution	Faculty of Electrical Engineering and Computing
Place	Zagreb
Date	Nostrificated in 2003.
INFORMATION ON ADDITIONAL TRAINING	
Year	2019
Place	Split; Zagreb
Institution	ESF – InteRiv, Dekaform d.o.o., WIPO
Field of training	Educational process and teacher competencies in high education; E-learning (Moodle); ISO 9001-9015 ; Intellectual properties
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Karna H., Masnov A., Jurko D., Perić T., Cross-Project Estimation of Software Development Effort Using In House Sources and Data Mining Methods - an Experiment; Proceedings of the 27th Conference on Software, Telecommunications and Computer Networks (SoftCOM 2019) / Rožić, Nikola ; Begušić, Dinko - Split, 2019.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Cooperative Unmmaned Vehicle in the Maritime Environment (CUV-ME), IP-2016-06-2082 – as part of the CroMarX project (Cooperative robotics in surveillance and research of the sea); Naval Information Warfare Pacific / Croatian ministry of Defence and UNIZG-FER (LABUST), as liaison and coordinator for the Croatian Navy/Defence Academy
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	EU ESF (InteRiv project) - Educational process and teacher competencies in high education (Faculty of Philosophy of the University of Split) EU ESF (InteRiv project) - E-learning (Moodle); University of Split
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is	University of Split students questionnaire - 5

comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Ana Karaman, M.Eng.**
The course he/she teaches in the proposed study programme	Elements of maritime transportI Elements of maritime transportII
GENERAL INFORMATION ON COURSE TEACHER	
Address	Pomorska 8, Jesenice
Telephone number	0914440407
E-mail address	anakaraman@gmail.com
Personal web page	
Year of birth	1964
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	Naval architecture, shipbuilding
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	MORH
Date of employment	01.11.1998.
Name of position (professor, researcher, associate teacher, etc.)	associate teacher
Field of research	Naval architecture, shipbuilding
Function	Logistic officer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree in Engineering
Institution	Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb
Place	Zagreb
Date	December 15th 1989.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Teacher of Shipbuilding and Damage Control in school for officers and petty officers
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Hrvoje Karna, Ph.D.**
The course he/she teaches in the proposed study programme	Applied Computer Science
GENERAL INFORMATION ON COURSE TEACHER	
Address	Dinka Šimunovića 19, Split
Telephone number	098 93 35 442
E-mail address	hrvoje.karna@morh.hr
Personal web page	-
Year of birth	1978
Scientist ID	-
Research or art rank, and date of last rank appointment	Postdoctoral researcher, October 6th 2018.

Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Lecturer, October 6th 2018.
Area and field of election into research or art rank	Information Technology; Computing
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Croatian Defence Academy
Date of employment	06.10.2018.
Name of position (professor, researcher, associate teacher, etc.)	Postdoctoral researcher and Lecturer
Field of research	Information Technology; Computing
Function	Postdoctoral researcher and Lecturer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture (FESB)
Place	Split
Date	July 8th 2016.
INFORMATION ON ADDITIONAL TRAINING	
Year	1) 2020 2) 2017 3) 2012 4) 2011 5) multiple
Place	Zagreb/Split/WBT
Institution	1) DEKAFORM (Zagreb) 2) LABO (Zagreb) 3) NETMedia (Split) 4) Oracle University (Zagreb) 5) Siemens (Web-based training)
Field of training	1) ISO 9001:2015 Quality Management System (QMS) 2) Microsoft Power BI (BusinessIntelligence) 3) Visual Studio 2012, .NET Framework 4.5 and Entity Framework 4) Oracle Siebel 8.1 x Integration and Oracle Siebel 8.1 x Enterprise Integration Manager 5) Business Conduct Guidelines; Global Competition; Information and Corporate Security; Global Bribery and Corruption Awareness; Protection against Social Engineering; Unconscious Bias - Fundamentals
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Software Engineering (Computing, FESB - Guest Lecturer) Database systems (Computing, FESB - External Associate) Computer Networks (Computing, FESB - Student Assistant)
Authorship of university/faculty textbooks in the field of the course	-
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Karna, H.; Gotovac, S.; Vicković, L.; Mihanović, L. The Effects of Turnover on Expert Effort Estimation. // Journal of information and organizational sciences (2020) doi:10.31341/jios 2. Karna, H.; Vicković, L.; Gotovac, S. Application of Data Mining Methods for Effort Estimation of Software Projects. // Software, practice & experience, 1 (2018), 1; 1-21 doi:10.1002/spe.2651 3. Karna, H.; Gotovac, S. Evaluating Expert Estimators Based on Elicited Competences. // Journal of Information and Organizational Sciences, 39 (2015), 1; 49-63 doi:10.31341/jios 4. Karna, H.; Masnov, A.; Jurko, D.; Perić, T. Cross-Project Estimation of Software Development Effort Using In House Sources and Data Mining Methods - an Experiment. // Proceedings of the 27th Conference on Software, Telecommunications and Computer Networks (SoftCOM 2019) / Rožić, Nikola ; Begušić, Dinko (ur.). Split: IEEE, 2019. 6045971, 5 doi:10.23919/SOFTCOM.2019.8903752 5. Karna, H.; Gotovac, S. Estimating Software Development Effort Using Bayesian Networks. // Proceedings of the 23nd Conference on Software, Telecommunications and Computer Networks (SoftCOM 2015) / Rožić, Nikola ; Begušić, Dinko (ur.). Bol, Croatia, 2015. str. 229-233 doi:10.1109/SOFTCOM.2015.7314091 6. Karna, H.; Gotovac, S. Modeling Expert Effort Estimation of Software Projects. // Proceedings of the 22nd Conference on Software, Telecommunications and Computer Networks (SoftCOM 2014) / Rožić, Nikola ; Begušić, Dinko (ur.). Split, Croatia: IEEE, 2014. str. 356-360 doi:10.1109/SOFTCOM.2014.7039106 7. Karna, H.; Gotovac, S. Mining Competences of Expert Estimators. // Proceedings of the 23rd International Conference on Information Systems Development (ISD2014) / Vjeran Strahonja, Neven Vrček, Dijana Plantak Vukovac, Chris Barry, Michael Lang, Henry Linger, Christoph Schneider (ur.). Varaždin, Croatia, 2014. pp. 14-22 8. Karna, H.; Gotovac, S. Estimators Characteristics and Effort Estimation of Software Projects. // Proceedings of the 9th International Joint Conference on Software Technologies (ICSOFT-EA 2014) / Andreas Holzinger, Therese Libourel, Leszek Maciaszek and Stephen Mellor (ur.). Vienna, Austria, 2014. str. 26-35 doi:10.5220/0005002600260035
Professional and scholarly articles published in the last five years in	-

subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	-
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	-
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	-
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split students questionnaire 2020 Computer Applications Global Index: average: 4,9 / maximum 5

First and last name and title of teacher	**Marko Katalinić, Ph.D.**
The course he/she teaches in the proposed study programme	Elements of maritime transport I Elements of maritime transport II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Starčevićeva 24D
Telephone number	+385 (0)21 619453
E-mail address	marko.katalinic@pfst.hr
Personal web page	-
Year of birth	1985
Scientist ID	342985
Research or art rank, and date of last rank appointment	Scientific associate, 02.10.2019.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	-
Area and field of election into research or art rank	Technical field, Naval Architecture
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split - Faculty of Maritime Studies (PFST)
Date of employment	11/2013
Name of position (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Naval Architecture
Function	Assistant professor
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Zagreb – Faculty of Mechanical Engineering and Naval Architecture
Place	Zagreb, Croatia
Date	31.05.2019

INFORMATION ON ADDITIONAL TRAINING	
Year	2010-2012
Place	Liege (Belgija), Nanstes (Francuska), La Spezia (Italija)
Institution	Universite de Liege (Belgium), Ecole Central de Nantes (France), Università degli Studi di Genova (Italy)
Field of training	Integrated Advanced Ship Design
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English , 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Construction resistance and propulsion of yachts: Maritime Yacht and Marine Technologies at PFST, undergraduate. Ship construction, Marine Engineering at PFST, undergraduate. Means of maritime transport I & II Marine Engineering at PFST, undergraduate. Ship propulsion system, Marine Engineering Marine Engineering at PFST, graduate.
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Katalinić, Marko; Parunov, Joško. Wave statistics in the Adriatic Sea based on 24 years of satellite measurements. Ocean engineering, 158 (2018), 378-388. Mudronja, Luka; Matić, Petar; Katalinić, Marko. Data-based modelling of significant wave height in the Adriatic Sea. Transactions on Maritime Science, 6 (2017), 1, 5-13 Mudronja, Luka; Katalinić, Marko; Bošnjak, Rino; Vidan, Pero; Parunov, Joško. Operability guidelines for product tanker in heavy weather in the Adriatic Sea. Annual of Navigation- The Journal of Polish Navigational Forum, 21 (2014), 95-106 Tomac, Tomislav; Klanac, Alan; Katalinić, Marko; Ehlers, Soren; von Bock und Polach, Rüdiger Ulrich Franz; Suominen, Matti; Montewka, Jakub. Numerical simulations of ship resistance in model ice. // Developments in Maritime Transportation and Exploitation of Sea Resources (IMAM 2013) / Guedes Soares, C; López Peña, F (ur.). La Coruña, Španjolska: CRC Press, 2013. pp. 847-851 Tomac, Tomislav; Milat, Arijana; Dundara, Đani; Kuzmanović, Obrad; Radolović, Vito; Vujasinović, Jasenko; Katalinić, Marko. Višekriterijska optimizacija laganih modularnih sendvič panela. // Zbornik radova 21. simpozija Teorija i praksa brodogradnje, in memoriam prof. Leopold Sorta (SORTA 2014)/ Dejhalla, Roko; Degiuli, Nastia; Matulja, Dunja; Mrakovčić, Tomislav; Zamarin, Albert (ur.) Rijeka:Tehnički fakultet, Sveučilište u Rijeci ; Brodogradilište Viktor Lenac, 2014. str. 407-418
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	

Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Croatian Science Foudation - project MODUS Croatian Science Foudation - project DATAS EU-FP7 CO-PATCH EU-FP7 MOSAIC Internal funding PFST – SeaMotion DataBase
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	5/5, Elements of maritime transport I & II

First and last name and title of teacher	**Danko Kezić, Ph.D.**
The course he/she teaches in the proposed study programme	Marine Electrical Engineering and Electronics I. Automation of Marine Engine Systems Marine Power Electronics
GENERAL INFORMATION ON COURSE TEACHER	
Address	Velebitska 7
Telephone number	0
E-mail address	danko.kezic@pfst.hr
Personal web page	www.pfst.hr/~danko
Year of birth	1960
Scientist ID	197501
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Distinguished Professor, 29th September 2016
Area and field of election into research or art rank	Area of technical sciences, filed electronics (scientific advisor), filed of traffic and transport technology (research associate)
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st December 1992
Name of position (professor, researcher, associate teacher, etc.)	Distinguished Professor
Field of research	Marine Electrical Engineering, Power Electronics, Automatization
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering and Computing in Zagreb
Place	Zagreb
Date	12th April 2003
INFORMATION ON ADDITIONAL TRAINING	

Year	2005
Place	Split
Institution	Faculty of Maritime Studies in Split
Field of training	Maintenance of maritime simulator
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language 3
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Participated in the formation of Electrical Engineering and Electronics study programme at the Faculty of Maritime Studies in Dubrovnik and introduced the following courses: Microelectronics I, (lectures and exercises from 1993, lectures from 1993. until 1995) - in Dubrovnik, Microelectronics II, (lectures and exercises from 1993, lectures from 1993. until 1995) - in Dubrovnik, Microelectronics III, (lectures and exercises from 1993, lectures from 1993. until 1995) - in Dubrovnik, Maintenance and Accuracy of Marine Electronics, (lectures and exercises from 1993, lectures from 1993. until 1998) - in Dubrovnik and in Split Measurements in Electronics, (lectures and exercises from 1993, lectures from 1993. until 1995) - in Dubrovnik, Marine power electronics, (lectures and exercises from 1993, lectures from 1993. until 1998) - in Dubrovnik At the Faculty of Maritime Studies, University of Split has been teaching courses B1.4. and B1.6. since 1995, and has updated the course - Ship computers and information systems (lectures and exercises since 1993) – in Dubrovnik and in Split Since academic year 2004/2005 has been involved in the introduction of new study programmes at the three-year university undergraduate study programme Maritime electrical and information technologies and at the university graduate study programme Maritime electrical technologies – Bologna process. Introduces the following courses at the university undergraduate study programme: Computer Control Technologies in Technical Systems, Maritime Electronic Security Systems, Computer Networks. Introduces and updates the following courses at the university graduate study programme: Mechatronics, Discrete Control Systems. Introduces the following course at the vocational postgraduate master's study programme – Nautical Studies: The Use of Maritime Simulators and Trainers.

	Introduces the following course at the inter-university postgraduate study programme – Nautical Studies: Guidance of Robotic Production Systems
Authorship of university/faculty textbooks in the field of the course	Energetska elektronika – priručnik za simulaciju pretvaračkih sklopova, Faculty of Maritime Studies, University of Split, 2007, ISBN: 978-953-6655-41-0 (electronic copy is available at www.pfst.hr). Radiotehnika za pomorske nautičare - web teaching material 2014
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Kezić D., Gudelj A,: " Petri Net Modelling and Optimization of Container Terminal Using Automated Guided Vehicles", 20th Conference of the International Federation of Operational Research Societies IFORS 2014,Barcelona, 13-18. 07. 2014. 2. Bošnjak. R., Kezić. D., Belamarić.:"Prijedlog poboljšanja VTS sustava u području uskih kanala", Proc. of 36th Conference on Transportation Systems with International Participation Automation in Transportation 2016, 9.-12.11.2016.Krapina - Maribor pp 96-99. 3. Belamarić G., Kezić D, " Modeliranje i simuliranje piratskih napada uz pomoć hibridnih vremenskih Petrijevih mreža", Naše More, vol 64, no. 1, 2017, pp. 1-8. 4. Bošnjak R., Kezić D, Vidan P.: " Methodology of synthesis of the supervisors by using Petri net", Brodogradnja,. Vol 68, No. 3/2017, pp.57-66. – Midterm communication. 5. Mlačić. D,.Kezić. Matić P.,:"Analiza rada upravljačkog sustava brodskog generator pare", Proc. of 38th Conference on Transportation Systems with International Participation Automation in Transportation 2018, 14.-18.11.2018., Osijek, pp 32 -36.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Branko Klarin, Ph.D.**
The course he/she teaches in the proposed study programme	Technical Mechanics 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	A. Hebranga 7, 23000 Zadar
Telephone number	091-6305950
E-mail address	Branko.Klarin@fesb.hr
Personal web page	www.fesb.hr/~bklarin
Year of birth	1962.
Scientist ID	3118339
Research or art rank, and date of last rank appointment	Scientific advisor, 11.05.2011.

Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Professor, 17.02.2016.
Area and field of election into research or art rank	Technical sciences, machine engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Fakultet elektrotehnike, strojarstva i brodogradnje - Split
Date of employment	01.06.1991.
Name of position (professor, researcher, associate teacher, etc.)	professor
Field of research	Renewable energy systems
Function	Full professor
INFORMATION ON EDUCATION – Highest degree earned	
Degree	D.sc.
Institution	Fakultet elektrotehnike, strojarstva i brodogradnje - Split
Place	Split
Date	03.12.2004.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	Fluid Mechanics, on-line course
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Andrun, Martina; Blagojević, Branko; Bašić, Josip; Klarin, Branko: Impact of CFD Simulation Parameters in Prediction of Ventilated Flow on a Surface–Piercing Hydrofoil. // Ship Technology Research - Schiffstechnik (2020) (međunarodna recenzija, prihvaćen) 2. Jurčević, Mišo; Penga, Željko; Klarin, Branko; Nižetić, Sandro: Numerical Analysis and Experimental Validation of Heat Transfer During Solidification of Phase Change Material in a Large Domain. // Journal of energy storage, 30 (2020), 1-14 (međunarodna recenzija, članak, znanstveni) 3. Milić Kralj, Dalija; Klarin, Branko: Wing Sails for Hybrid Propulsion of a Ship. // Journal of Sustainable Development of Energy, Water and Environment Systems, 4 (2016), 1; 1-13

	doi:10.13044/j.sdewes.2016.04.0001 (međunarodna recenzija, članak, znanstveni) 4. Šimunović, Jakov; Barbir, Frano; Radica, Gojmir; Klarin, Branko: Techno-economic analysis of PV/wind turbine stand- alone energy system. // SpliTech2019 - Bol i Split, Hrvatska, 2019. 1570537819, 5 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni) 5. Klarin, B.; Garafulić, E.; Vučetić, N.; Jakšić, T.: New and smart approach to aeroponic and seafood production. // Journal of Cleaner Production, 239 (2019), 117665, 6 doi:10.1016/j.jclepro.2019.117665 (međunarodna recenzija, članak, znanstveni)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	ME4CataLOgue – Croatian catalogue of knowledge, skills and competences for mechine engineering studies based on learning outcomes – Training for teachers and administrative personel
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Dean's acknowledgement for best ranked 10% teachers in institution

First and last name and title of teacher	**Nikola Koceić-Bilan, Full professor**
The course he/she teaches in the proposed study programme	Mthematics I, Mthematics II Mthematics III
GENERAL INFORMATION ON COURSE TEACHER	
Address	Domovinskog rata 27c, Split
Telephone number	021619265
E-mail address	koceic@pmfst.hr
Personal web page	
Year of birth	1973.
Scientist ID	261533

Research or art rank, and date of last rank appointment	Senior scientist, 12. 12. 2017.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor, 25. 1. 2018.
Area and field of election into research or art rank	Natural sciences, Mathematics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of science
Date of employment	15.11.1999.
Name of position (professor, researcher, associate teacher, etc.)	Full professor
Field of research	Geometric topology, Algebraic topology, Shape theory, Mathematical education
Function	Dean
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Zagreb
Place	Zagreb
Date	23.10.2006.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	- Fundamentals of mathematical analysis, Set theory , Statistics (BsC level in Mathematics – University of Split, University of Mostar) - Measure and integral, Methods of teaching mathematics Constructive methods in geometry (MsC level in Mathematics – University of Split, University of Mostar) - Introduction to Statistical Methods II, American College of Menagment and Technology, Dubrovnik - Homotopy, shape and coarse shape, The coarse shape groups, Research in mathematical education (PhD, postgraduate study in Mathematics – University of Zagreb)
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Koceić Bilan, Nikola; Mirošević, Ivančica Box homotopy and the reduction of pro*-HTop category // *Homology homotopy and applications* 22 (2020) , 1; 55-68 Koceić Bilan, Nikola; Mirošević, Ivančica

	Functorial reducing pro*-Grp category to pro-Grp // *Topology and Its Applications* 263 (2019) ; 74-89 Koceić Bilan, Nikola; Čuka, Zdravko Topological coarse shape groups of comapct metric spaces// *Rad HAZU* 21 (2017) Koceić Bilan, Nikola Continuity of coarse shape groups // *Homology homotopy and applications* 18 (2016) , 2; 209-215 Koceić Bilan, Nikola Computing coarse shape groups of solenoids // *Mathematical communications* 14 (2014) ; 243-251
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	Guberina, Antonija; Koceić Bilan, Nikola Genaralizirani Apolonijev problem *// Acta mathematica Spalatensia Series didactica Vol.2 (2019),* 67-92 Mirošević, Ivančica; Koceić-Bilan, Nikola; Jurko, Josipa Različiti nastavno-metodički pristupi čunjosječnicama // *Math.e : hrvatski matematički elektronski časopis*. 27 (2015) ; 1-10 Koceić Bilan, Nikola; Jelić, Ivan On intersections of the exponential and logarithmic curves // *Annales Mathematicae et Informaticae* 43 (2014) ; 159-170 Koceić Bilan, Nikola; Smajić, Nikolina; Trombetta Burić, Luisa Konstruktivna geometrija u nastavi matematike // *Osječki matematički list*. 13 (2013) , 1; 74-83 Koceić Bilan, Nikola; Trombetta Burić, Luisa; Lebedina, Ana Klasični grčki problemi // *Zbornik radova Fakulteta strojarstva i računarstva Sveučilišta u Mostaru*. 2012 (2012) ; 47-56
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	"Grubi oblik i klasifikacija natkrivanja", voditelj; V. Matijević, PMF, Split (researcher) HR.3.1.15 ESF: Razvoj modernih studijskih programa za izobrazbu nastavnika informatike, tehnike, biologije, kemije, fizike i matematike na temeljima razvoja Hrvatskog kvalifikacijskog okvira, 2015-2016, European Social Fund. (principle investigator) „Ne knjiga nego znanje“ (Sveučilište u Splitu, uvođenje inovativnog sustava za učenja matematičkih kolegija) (group leader)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Graduate study programme Mathematics and informatics (teacher training), Univesity of Rijeka, (1998)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Results of students evaluation in the last five years are always above 4.5 (average) at all courses (Department of Mathematics, Faculty of science)

First and last name and title of teacher	**Silvana Kokan, M.Ed.**
The course he/she teaches in the proposed study programme	Maritime English I Maritime English II Naval English I Naval English II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Kocunarski prilaz II / 3
Telephone number	091 531 76 71
E-mail address	skokanhr@yahoo.com
Personal web page	/
Year of birth	1964
Scientist ID	/
Research or art rank, and date of last rank appointment	/
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	/
Area and field of election into research or art rank	/
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Croatian Defence Academy „Dr. Franjo Tuđman“
Date of employment	15 January 1997
Name of position (professor, researcher, associate teacher, etc.)	Associate teacher
Field of research	/
Function	Teacher
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master's degree in English Language and Literature and Italian Language and Literature
Institution	Faculty of Humanities and Social Sciences, University of Split
Place	Zadar
Date	March, 1989
INFORMATION ON ADDITIONAL TRAINING	
Year	2001 2001
Place	USA, San Antonio, Texas Great Britain, Plymouth
Institution	Defence Language Institute St Mark and John's College
Field of training	Foreign Language Training for Military Personnel English for Specific Purposes – course design
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Designing and conducting ESP courses for military personnel: - English skills for PSO Logisticians - English skills for Staff Officers
Authorship of university/faculty textbooks in the field of the course	/
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	/
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	/
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	/
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	English Language and Literature Degree
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Croatian Defence Academy Award for Teaching
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split Student evaluation: average grade 4.8 /5

Title, name, surname	**Maja Krčum, PhD, Associate Professor**
Course to be taught in the suggested lifelong learning programme	ONBOARD ELECTRIC POWER SYSTEM
GENERAL INFORMATION ON THE TEACHER	
Address	BIJANKINIJEVA 8, Split
Phone	++385(0)913807000
e-mail address	mkrcum@pfst.hr
Personal web page	
Year of birth	1958
Researcher ID in the Register of researches	173265
Research or art position and the date of the last appointment	Senior scientific associate 26.02.2020.

Research and teaching position, art and teaching position or teaching position and date of the last appointment	Associate professor 09.03.2020.
Area and field of election in research or art position	Technical sciences, field of transport and transport technology, branch of maritime and river transport
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1.11.1999.
Name of position (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Power systems, Electrical machines, Application of high voltage technologies, Quality management
Function	Head of the Department of Maritime Electrotechnical and Information Technologies / Director of the Quality Center
INFORMATION ON EDUCATION – highest degree earned	
Degree	Ph. D. degree in Technical science
Institution	University of Rijeka, Faculty of Maritime Studies
Place	Rijeka
Date	26.07.2012.
INFORMATION ON ADDITIONAL TRAINING	
Year	2016
Place	Split
Institution	Hrvatski registar brodova
Field of additional training	Tranzition in norma ISO 9001:2015
MOTHER TONGUE AND OTHER LANGUAGES	
Mother tongue	Croatian
Foreign language and knowledge of the language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and knowledge of the language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 4
Foreign language and knowledge of the language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR TEACHING THE COURSE	
Earlier experience in teaching similar courses (state course name)	1. High voltage technologies in maritime affairs - graduate study of ship engineering, Faculty of Maritime Studies in Split 2. Onboard electric Power System I and II - Faculty of Maritime Studies in Split 3. Electric motor drives - Faculty of Maritime Studies in Split
Authorship of universitiy/faculty textbooks from similar areas	1.Krčum, Maja: Repetitorij s laboratorijskim vježbama iz električnih strojeva, sveučilište u splitu, Studijski centar za stručne studije, split, 2009.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Petković, Miro; Zubčić, Marko; Krčum, Maja; Vujović, Igor Maritime Green Solution for Traffic Congestion // TransNav, **14** (2020), 1; 97-103 doi:10.12716/1001.14.01.11 2. Krčum, Maja; Zubčić, Marko; Dlabač, Tatjana: Electromechanical Analysis of the Medium Voltage Earthing Switch due to Short-Time and Peak Withstand Current Test // *Energies,* **12** (2019), 16; 3189, 17 doi:10.3390/en12163189 3.Dlabač, Tatijana; Ćalasan, Martin; Krčum, Maja; Marvučić Nikola PSO-BASED PID CONTROLLER DESIGN FOR SHIP COURSE-KEEPING AUTOPILOT // *Brodogradnja : časopis brodogradnje i brodograđevne industrije,* **70** (2019), 4; UDC 629.5.017.3:629.3.027.2, 15 doi:10.21278/brod70401

	4. Krčum, Maja; Zubčić, Marko; Gudelj, Anita: A Review and Comparison of Ship Power Simulation Methods // *Naše more,* **Vo. 65. No.4** (2018), 284-288 doi:10.17818/NM/2018/4SI.22 (međunarodna recenzija, pregledni rad, znanstveni) 5.Zubčic, Marko; Krčum, Maja: Power Frequency Withstand Voltage Type Testing and FEM Analysis of the Medium-Voltage Switchgear Busbar Compartment // *2018 17th International Symposium INFOTEH-JAHORINA (INFOTEH 2018)* East Sarajevo, RS, Bosnia-Herzegovina: IEEE, 2018. str. 23-27 doi:10.1109/infoteh.2018.8345514 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni) 6. Krčum, Maja; Gudelj, Anita; Tomas, Vinko: Optimal Design of Ship's Hybrid Power System for Efficient Energy // *Transactions on Maritime Science,* **VOL 7** (2018), No 1; 23-32 doi:10.7225/toms.v07.n01.002 (međunarodna recenzija, prethodno priopcenje, znanstveni) 7. Krčum, Maja; Zubčić, Marko; Žanić-Mikuličić, Jelena: BRODSKI ELEKTROENERGETSKI SUSTAV - MREŽE ISTOSMJERNE STRUJE // *KoREMA 37 th Conference on transportation Systems with International Participation Automatio in Transportation 2017* / Šakić, Željko (ur.).Zagreb: KoREMA, Unska 3, Zagreb, Hrvatska, 2017. str. 125-128 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni)
Professional and scholarly articles published in the last five years in areas of teaching methodology and teaching quality (5 works at most)	1. Kuzmanić, Ivica; Krčum, Maja; Vujović, Igor: CONTRIBUTION TO MARINE ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGIES CURRICULUM // *7th International Maritime Science Conference - Book of Proceedings* / Vidan, Pero ; Račić, Nikola ; Twrdy, Elen ; Skočibušić, Mihaela Bukljaš ; Radica, Gojmir ; Vukić, Luka ; Mudronja, Luka (ur.). Split: Sveučilište u Splitu, Pomorski fakultet u Splitu, 2017. str. 187-192 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni)
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
Name of the programme and extent in which the teacher acquired methodological-psychological-didactic-pedagogical competences	
RECOGNITION AND AWARDS	
Recognition and awards for teaching and research/art work	

First and last name and title of teacher	**Associate professor Nikša Krnić, Ph. D**
The course he/she teaches in the proposed study programme	Technology of material
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32
Telephone number	+38521305912
E-mail address	nkrnic@fesb.hr
Personal web page	-
Year of birth	1956.
Scientist ID	122696
Research or art rank, and date of last rank appointment	Senior Research Associate, 2011.

Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate professor, May 2018.
Area and field of election into research or art rank	Technical sciences, scientific field of Mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Universitiy of Split, Faculty Electrical Engineering, Machanical Engineeering and Naval Architecture
Date of employment	1984.
Name of position (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Teaching courses in materials, technology and tribology
Function	-
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D
Institution	University of Zagreb, Faculty of Mechanical Engineering and Naval architecture
Place	Zagreb
Date	1999.
INFORMATION ON ADDITIONAL TRAINING	
Year	1988. – 1989.; 1992.
Place	Berlin, Njemačka
Institution	Technische Universitat Berlin, Fuege- und Schweisstechnik
Field of training	Welding
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	FESB vocational study, undergraduate study, graduate study, postgraduate study of mechanical engineering and shipbuilding Faculty of Maritime studies University Department of Professional Studies University of Applied Sciences Velika Gorica
Authorship of university/faculty textbooks in the field of the course	1. Duplančić, I.; Krnić, N.: "Materijali 3", Split, 2011., elektronski udžbenik, FESB, e – learning portal, 2. Duplančić, I.; Krnić, N.; Bajić, D.: Osnove tehnologijâ, Split, 2008, elektronski udžbenik, FESB, e – learning portal -a,
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Krnić, N.: Zavarivanje i zavarljivost aluminija i njegovih legura, Seminar Aluminij i aluminijske legure - Rukovanje, obrada, zavarivanje, DTZ Dalmacija, Solin, 2008., 22 pp. 2. Krnić, N.: Suvremene laserske tehnologije obrade materijala, Društvo inženjera strojarstva Split, DISS, Split, 2012. pozvano predavanje, 3. Kordić, Z.; Krnić, N.: Trends in Application of Composite Materials for Helicopter Rotor Blades, Proceedings of 2nd

	Conf. on Business Systems Management – UPS 2001, DAAAM, Mostar, 2001., 4. Krnić, N.; Crnečki, D.; Buljubašić, D.: Roboti i simulatori za zavarivanje (Welding Robots and Simulators), Zavarivanje i rezanje za građevinarstvo i arhitekturu, Zbornik radova, seminar, DTZ Dalmacija, pp. 193 - 216, Split, 2010; FESB, ISBN 978-953-290-024-8 5. Krnić, N.; Dorn, L.; Kralj, S.: Welding Processes in Modern Shipbuilding Industry, Proc. of the 3rd International Conf. Welding in Maritime Engineering, Hvar, Croatia, 2004, HDTZ, CWS, pp. 523 - 532, ISBN 953-96454-6-8.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	ME4CataLOgoue (Mechanical Engineering for Catalogue)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Award of Croatian Welding Society

First and last name and title of teacher	**Zlatan Kulenović, Ph.D.**
The course he/she teaches in the proposed study programme	Technical Mechanic I
GENERAL INFORMATION ON COURSE TEACHER	
Address	Put Plokita 83, Split
Telephone number	021 537 769
E-mail address	zlatan@pfst.hr
Personal web page	
Year of birth	1954
Scientist ID	226014
Research or art rank, and date of last rank appointment	Scientific advisor with tenure 2nd February 2009
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Distinguished Professor 2nd February 2009
Area and field of election into research or art rank	Area of technical sciences, field of mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies, University of Split
Date of employment	since 1996
Name of position (professor, researcher, associate teacher, etc.)	Professor

Field of research	Mechanical engineering - marine engineering, machine and construction mechanics, technical physics
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD in technical sciences
Institution	Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb.
Place	Zagreb
Date	9th July 1987
INFORMATION ON ADDITIONAL TRAINING	
Year	1980 -1982, 1984 -1986
Place	Zagreb
Institution	Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb.
Field of training	Experimental methods of construction mechanics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German language(3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Russian language (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Undergraduate (pre-Bologna), undergraduate, graduate and postgraduate studies of Mechanical Engineering, Technology and Maritime Affairs at the University of Banja Luka, the University of Split and the University of Rijeka. Courses: Mechanics, Technical Mechanics, Material Resistance, Material Strength, Mechanisms, Vibrations, Fundamentals of Construction Design, Fundamentals of Mechanical Engineering, Experimental Methods of Structure Analysis, Technical Drawing, Descriptive Geometry, Engineering Graphics, Machine Elements, Ship Machine Elements, Mechanics of Marine Structures, Ship Hydraulic and Pneumatic Systems, Physics, Engineering Physics, Technical Physics, Theory of Elasticity, Dynamic Structures, Structural Mechanics of Naval Systems.

Authorship of university/faculty textbooks in the field of the course	1. Z. Kulenović, Zbirka riješenih ispitnih zadataka iz otpornosti materijala, Univerzitet u Banja Luci, Mašinski fakultet, Banja Luka 1980. 2. Z. Kulenović, Mehanizmi, Univerzitet u Banja Luci, Mašinski fakultet, Banja Luka 1991. 3. Z. Kulenović, Mehanika I, Univerzitet u Banja Luci, Mašinski fakultet, Banja Luka 1995. 4. Z. Kulenović, Čvrstoća elemenata pomorskih konstrukcija, Riješeni zadaci, Sveučilište u Splitu, Visoka pomorska škola u Splitu, Split 2001. 5. Z. Kulenović, Mehanika krutih tijela, Odjel za studij mora i pomorstva Sveučilišta u Splitu, Split 2002. 6. Z. Kulenović, Tehnička fizika, Odabrana poglavlja, Odjel za studij mora i pomorstva Sveučilišta u Splitu, Split 2002. 7. Z. Kulenović, Nauka o čvrstoći, Visoka pomorska škola Sveučilišta u Splitu, Split 2003. 8. Z. Kulenović, Tehničko crtanje, Sveučilište u Splitu, Visoka pomorska škola u Splitu, Split 2003. 9. Z. Kulenović, Primijenjena mehanika, Čvrstoća, Pomorski fakultet Sveučilišta u Splitu, Split 2005. 10. Z. Kulenović, Čvrstoća materijala, Pomorski fakultet Sveučilišta u Splitu, Split 2007. 11. Z. Kulenović, Mehanika I, Pomorski fakultet Sveučilišta u Splitu, Split 2007. 12. Z. Kulenović, Mehanika II, Pomorski fakultet Sveučilišta u Splitu, Split 2008. 13. Z. Kulenović, Mehanika elemenata pomorskih konstrukcija, Pomorski fakultet Sveučilišta u Splitu, Split 2009. 14. Z. Kulenović, Čvrstoća materijala, Drugo dopunjeno izdanje, Pomorski fakultet Sveučilišta u Splitu, Split 2010. 15. Z. Kulenović, Elementi brodskih strojeva i konstrukcija, Pomorski fakultet Sveučilišta u Splitu, Split 2012. 16. Z. Kulenović, Tehnička mehanika za pomorce, Pomorski fakultet Sveučilišta u Splitu, Split 2013. 17. Z. Kulenović, Tehnička mehanika I, Pomorski fakultet Sveučilišta u Splitu, Split 2013. 18. I. Vujović, I. Kuzmanić, Z. Kulenović, Dielectric Materials' Selection for Marine Applications, LAP Lambert Academic Publishing, Saarbrücken 2014, Germany. 19. Z. Kulenović, Osnove inženjerska mehanike, Faculty of Maritime Studies in Split, Split 2016.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. V. Vetma, Z. Kulenović, R. Antonić, Ispitivanje značajki i utjecaj brodskog vijka na propulziju ribarskog broda, Naše more 61 (2014), 1-2, 17-27. 2. Z. Kulenović, I. Vujović, S. Vujović Kežić, Simulation of Important Factor's Impact in the Choice of Dielectric Material for Marine Applications, Book of Proceedings of 6th International Marine Science Conference IMSC 2014, Solin 2014. 3. I. Vujović, Z. Kulenović. I. Kuzmanić, New Algorithm for Optimal Dielectric Selection in Marine Environment, Brodogradnja/Shipbuilding 66 (2015), 3, 39-48. 4. J. Šoda, I. Vujović, Z. Kulenović, Analysis of the Vibration Signal Using Time-Frequency Methods, Transactions of FAMENA 39 (2015), 3, 23-34. 5. I. Vujović, I. Kuzmanić, Z. Kulenović, Relationship of Advences in Electronics and Maritime Traffic, with Case Study

	of Fall Detection in Smart Cabins, Book of Proceedings of 7th International Marine Science Conference IMSC 2017, Solin 2017.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	I. Vujović, I. Kuzmanić, Z. Kulenović, N. Maleš, Additive Manufacturing of Spare Parts in Maritime Industry – Technology Transfer in Mariner Education, Proceedings of 21st International Research/Expert Conference TMT 2018, Karlovy Vary 2018, Czech Republic.
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	University in Banja Luka High school Hvar
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Croatian Defence Academy "Dr. Franjo Tuđman" - Recognition to the Head of Organizational Unit PSP, Department of Marine Studies, University of Split for cooperation and contribution to teaching and leadership of scientific studies.

First and last name and title of teacher	**Ivan Komar, PhD, associate professor**
The course he/she teaches in the proposed study programme	MARINE ENGINES
GENERAL INFORMATION ON COURSE TEACHER	
Address	Paraćeva 5, 21000 Split
Telephone number	+385 91 380 7011
E-mail address	ivan.komar@pfst.hr
Personal web page	www.pfst.hr
Year of birth	1953
Scientist ID	291705
Research or art rank, and date of last rank appointment	Scientific advisor, 10.07. 2019.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assocaiate professor 01.11.2017.
Area and field of election into research or art rank	Technical sciences, scientific field traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	10/1/2006
Name of position (professor, researcher, associate teacher, etc.)	Assocaiate professor
Field of research	Marine engineering
Function	Head of Specialeducation programe for seafarers
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Docotral degree
Institution	University in Rijeci, Faculty of Maritime Studies
Place	Rijeka
Date	1/11/2012
INFORMATION ON ADDITIONAL TRAINING	
Year	2019: Wartsila Instruktor ERS 5000 Techsim V.8.8 2016: Instruktor BS simulatora Kongsberg Neptune ERS; 2016:

	Instruktor BS simulatora Transas ERS 5000; 2013: Instruktor BS simulatora Transas ERS 5000; 2009: AutoCAD-a: crtanje u ravnini, napredno crtanje u ravnini, 3D modeliranje. 2007: Instruktor BS simulatora Transas ERS 4000;
Place	Split, Kotor
Institution	Croatian regista of shipping Faculty of Maritime Studies u Kotoru, Učilište ALGEBRA,
Field of training	Brodsko strojarstvo
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Engleski (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Ruski (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Njemački (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Marine propulsion systems Marine engines Preparation and management of instalation Maintenance management Technical supervision and classification Maintenance systems Maintenance and reliability of marine machine systems.
Authorship of university/faculty textbooks in the field of the course	Komar,I.; Lalić,B., „Sea Transport Air Polution“, (poglavlje u knjizi) // Curent Air Quality Issues / Yazd University: In Tech CC BY, 2015. Str: 165-202. DOI: 10.5772/59720 (ISBN 978-953-218);
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Komar, I., Vulić, N., Roldo,L., Hydrodynamic and Elastohydrodynamic Lubrication Model to Verify the Performance of Marine Propulsion Shafting, Transactions of FAMENA, Volume 37, No.1,(2013); str.15-27, (ISSN: 1333- 1124). Roldo,L., Komar, I., Vulić, N., Design and Materials Selection for Environmentally Friendly Ship Propulsion System, Strojniški vestnik-Jurnal of Mechanical Engineering 58(2012)/12 str. 709- 715, DOI: 10.5545/sv-jme.2012.601, (ISSN: 0039-248). Komar, I., Vulić, N., Antonić, R., Specific of shaft alignment for ships in service, PROMET – Traffic & Transportation Scientific Journal on Traffic and Transportation Research. 21 (2009), 5; str.349-357, (ISSN: 0353-5320). Komar, I., Antonić, R., Kulenović, Z., Experimental tuning of marine diesel engine speed controller parameters on engine test bed, Transactions of FAMENA, 33 (2009) 2; str.51-70, (ISSN: 1333-1124). Lalić, B.; Komar, I.; Nikolić, D., „Optimization of Ship Propulsion Diesel Engine to Fulfill the New Requirements for Exhaust Emission“, Transactions on Maritime Science (ToMS), April 2014, Vol.3, No.1 3(2014), 1; 20-31. Lalić, B., Kliškić, M., Komar, I., Analiza korozijskog djelovanja u cilindru brodskoga sporohodnoga dvotaktnog dizelskog motora, Naše more, znanstveni časopis za more i pomorstvo, Vol.60 No.1-2, Str. 8-15, Dubrovnik, 2013. (ISSN: 0469-6255). Lalić, B., Komar, I., Dobrota, Đ., Structural Modifications for Improving the Tribological Properties of the Cylinder Unit in Two

	stroke Slow Speed Marine Diesel Engine, Transactions on maritime science- ToMS. Vol. 1 (2012), No. 2, str.89-95 Roldo, L.; Komar, I.; Vulić, N., Materials selection and software application as design tools for marine propulsion shafting bearings, DESIGN 2012,Marjanović, Dorian (ur.). Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb; The Design Society, Glasgov, 2012. Str. 679-686, Cavtat, 2012. Komar, I.; Dobrota, Đ.; Lalić, B., New methods in suppression the risk of ship's diesel engine crankcase explosions, IMSC 2012, Rosanda Mulić, (ur.). Split : Faculty of Maritime Studies, Split Zrinsko-frankopanska 38, 2012. Str.193-202, Split, 2012.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Voditelj projekta za Faculty of Maritime Studies „Funkcionalna integracija University of Split, PMF-ST, PF-ST te KTF-ST kroz razvoj znanstveno-istraživačke infrastrukture u Zgradi tri fakulteta (KK.01.1.1.02.0018)“ financiranog od strane EU Voditelj međunarodnog znanstveno-istraživačkog projekta pod nazivom: »*Mogućnosti smanjenja emisije onečišćivača s brodova u crnogorskom i hrvatskom dijelu Jadrana implementacijom aneksa VI MARPOL konvencije«* sufinanciranom od strane MZOS-RH u okviru zajedničke hrvatsko-crnogorske suradnje za 2013/14. Voditelj projekta br. 250-2502209-2364, financiranom od strane MZOS RH pod nazivom: *Nove tehnologije u dijagnostici i upravljanju brodskih porivnih sustava.(2012-2014)* Istraživač na projektu br. 250-2502209-2366: Upravljanje brodskim energetskim sustavima u uvjetima kvara i otkaza (2007-2012).
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Matični odbor za područje tehničkih znanosti: Odluka o znanstvenoj izvrsnosti 04.07.2018.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Ivica Kuzmanić, M.Sc.Eng.**
The course he/she teaches in the proposed study programme	Marine Electrical Engineering and Electronics I.
GENERAL INFORMATION ON COURSE TEACHER	
Address	Sukoišanska 23, Split
Telephone number	091 7633 408
E-mail address	ikuzman@pfst.hr
Personal web page	www.pfst.hr/~ikuzman
Year of birth	1953
Scientist ID	153406

Research or art rank, and date of last rank appointment	Scientific assistant, 17. 10. 1992.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	High school professor in a permanent position, 14. 6. 2006.
Area and field of election into research or art rank	Technical sciences, electrotehnics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies University of Split
Date of employment	1. 1. 1985.
Name of position (professor, researcher, associate teacher, etc.)	High school professor in a permanent position
Field of research	Electotechnics, Automatisation
Function	Head of PEIT studies, former vice-dean, editor of the international scientific journal "Transaction on Maritime Science"
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Magistar znanosti
Institution	Elektrotehnički fakultet Sveučilišta u Zagrebu
Place	Zagreb
Date	28. 2. 1991.
INFORMATION ON ADDITIONAL TRAINING	
Year	1978, 1980, 1983,
Place	Radovljica
Institution	IBM fro Central Europe
Field of training	Informatics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Lecture of this and related courses for 35 years. Fundamentals of Electrical Engineering and Electronics, Marine Electrical Engineering and Electronics, Marine Electrical Engineering, Electrical Engineering, Fundamentals of Electrical Engineering I and II, (PN, BS, PSP, RT, PEIT, PTJM, PM)
Authorship of university/faculty textbooks in the field of the course	1.Kuzmanić, I.: Osnove elektrotehnike: Električni krugovi istosmjerne struje – Elektrostatika, University of Split, Faculty of Maritime Studies Dubrovnik, Dubrovnik, 1988. 2. Kuzmanić, I.: Električna mjerenja, University of Split, Faculty of Maritime Studies Dubrovnik – Studij u Splitu, Split, 1992. 3. Kuzmanić, I.: Osnove brodske elektrotehnike i elektronike I, Faculty of Maritime Studies University of Split, Split, 1997., ISBN 953-6655-00-4 4. Kuzmanić, I.: Osnove brodske elektrotehnike i elektronike, I dio, Zbirka riješenih zadataka, Faculty of Maritime Studies University of Split, Split, 1998., ISBN 953-6655-02-0 5. Kuzmanić, I., Vlašić, R., Vujović, I.:Elektrotehnički materijali, University of Split, Visoka pomorska škola u Splitu, Split, 2001., ISBN 953-6655-31-4

	6. Vujović, I., Kuzmanić, I.: Brodska elektrotehnika i elektronika – repetitorij s uputama za laboratorijske vježbe, University of Split, Visoka pomorska škola u Splitu, Split, 2003., ISBN 953-6655-71-3 7. Vujović, I., Kuzmanić, i.: Brodska elektrotehnika i elektronika – repetitorij s uputama za laboratorijske vježbe, 2. izdanje, University of Split, Faculty of Maritime Studies u Splitu, Split, 2006., ISBN 953-6655-71-3 8. Kuzmanić, I., Vujović, I.: Osnove elektrotehnike – zbirka riješenih zadataka, University of Split, Faculty of Maritime Studies u Splitu, Split, 2005., ISBN 953-6655-33-0 9. Kuzmanić, I.: Brodska elektrotehnika i elektronika, University of Split, Faculty of Maritime Studies u Splitu, Split, 2006., ISBN 953-6655-34-9 10. Vujović, I., Kuzmanić, I.: Brodska elektrotehnika i elektronika – repetitorij s uputama za laboratorijske vježbe, 3. izd.,, University of Split, Faculty of Maritime Studies u Splitu, Split, 2006., ISBN 953-6655-33-5 11. Vujović, I., Kuzmanić, I.: Repetitorij s uputama za laboratorijske vježbe iz Osnova elektrotehnike i elektronike i Brodske elektrotehnike i elektronike, Faculty of Maritime Studies u Splitu, Split, 2008., ISBN 978-953-6655-56-4
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Kuzmanić, I., Vujović, I., Šoda, J.: Corrosion Monitoring in Marine Enviroment Using Wavelet Description, Key Engineering Materials, 478, 2011., (p.p. 40-45) 2. Vujović, I., Kuzmanić, I., Šoda, J., Beroš, S. M.: Visualization of Global Illumination Variations in Motion Segmentation, in: Experimental and Numerical Investigation of Advanced Materials and Structures, Advanced Structured Materials, Öechner, A., Altenbach, H. (eds), London, Springer, 2013, p.p. 55-89. 3. Šoda, J., Beroš, S.M., Kuzmanić, I., Vujović, I.: Diskontinuity Detection in the Vibration Signal of Turning Machines, in: Experimental and Numerical Investigation of Advanced Materials and Structures Advanced Structured Materials, Öechner, A., Altenbach, H. (eds), London: Springer International Publishing Switzerland, 2013., p.p. 27-54 4. Vujović, I., Kuzmanić, I., Kulenović, Z.: Dielectric Materials`Selection for Marine Applications, LAP Lambert Academic Publishing, Saarbrücken, 2014. (ISBN 978-3-659-59822-7 5. Kuzmanić, I., Vujović, I.: Reliability and Availability of Quality Control Based on Wavelet Computer Vision, Springer Briefs in Electrical and Computer Engineering, 2015, ISBN 978-3-319-13316-4
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. Kuzmanić, I., Vujović, I.: Observation of Damage to Materials foe Educational Purposes at the BSc Level, in: Design and Analysis of Materials and Engineering Structures, Öechner, A., da Siva, L. F. M., Altenbach, H. (eds), New York: Springer-Verlag, 2013., p.p. 27-36
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	

PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Nenad Leder, Ph.D.**
The course he/she teaches in the proposed study programme	Maritime Meteorology and Oceanology
GENERAL INFORMATION ON COURSE TEACHER	
Address	Šimićeva 56, 21000 Split
Telephone number	091 2257401
E-mail address	nenad.leder@pfst.hr
Personal web page	-
Year of birth	1958
Scientist ID	192292
Research or art rank, and date of last rank appointment	Senior research associate, 22nd January 2018
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor , 1st June 2017
Area and field of election into research or art rank	Area of natural sciences, field of interdisciplinary natural science
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st June 2017
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Geophysics
Function	-
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Zagreb, Faculty of Science, Department of Geophysics
Place	Zagreb
Date	22nd October 2004
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, 5 (excellent)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, 3 (good)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Lectures and exercises: • Physics (Undergraduate university study programme of Geodesy, Faculty of Civil Engineering, Architecture and Geodesy, University of Split)

	• Two courses at the postgraduate study programme (Faculty of Civil Engineering, Architecture and Geodesy, University of Split) • Maritime Meteorology (Faculty of Maritime Studies in Split) • Marine Meteorology and Ocean Science (Faculty of Maritime Studies in Split) • Maritime Geography (Faculty of Maritime Studies in Split) • Maritime Nautical Engineering (Faculty of Maritime Studies in Split)
Authorship of university/faculty textbooks in the field of the course	-
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Matić, F., Kovač, Z.Ž., Vilibić, I., Mihanović, H., Morović, M., Grbec, B., Leder, N., Džoić, T. 2017. Oscillating Adriatic temperature and salinity regimes mapped using the Self-Organizing Maps method, Continental Shelf Research, 132, 11-18, doi:10.1016/j.csr.2016.11.006 Leder, N., Duplančić Leder, T., 2017. Satellite derived bathymetry – Low cost survey system, 7th International Maritime Science Conference, April 20th-21st, 2017, Solin, Croatia, 516-520. Duplančić Leder, T., Leder, N., 2018. Land surface temperature determination in the town of Mostar area, Tehnički vjesnik, Vol.25., No.4, 1219-1226. https://doi.org/10.17559/TV-20160815131129. Leder, N., Duplančić Leder, T., 2018. Unmanned vehicle systems in hydrographic survey – new opportunities and challenges, 18th International Conference on Transport Sciences, June 14th and 15th, 2018, Portoroz, Slovenia, 184-188.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. 2013-2014 Coastal cities water pollution control project 2 IBRD 7640/hr, PART 3.2 Sea water quality monitoring, MENP/M-C-1 Consulting services for the definition of the Monitoring and Observation system for ongoing assessment of the Adriatic Sea, Ministry of Construction and Physical Planning, co-project manager. 2. 2013-2015 project entitled "Prevencija onečišćenja mora zajedničkim djelovanjem" – "JASPPer", IPA Cross-Border Programme Croatia-Montenegro, project manager. 3. 2019 – VIF project entitled "Pomorska meteorološka mjerenja i istraživanja, Faculty of Maritime Studies in Split, project manager.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	-
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Award for the best poster on 39th CIESM Congress (Commission Internationale pour l' Exploration Scientifique de la Mer Mediterranee) held in Venice in 2010: Pasarić, M., Čupić, S., Domijan, N., Leder, N.,Orlić, M., 2010. *Record-breaking sea levels in the northern Adriatic on 1 December 2008*, Rapport du Commission Internationale pour l'exploration scientifique de la Mer Mediteranee, **39**, 157.

First and last name and title of teacher	**Zvonimir Lušić, Ph.D.**
The course he/she teaches in the proposed study programme	Terrestrial Navigation Astronomical Navigation Tactical Navigation
GENERAL INFORMATION ON COURSE TEACHER	
Address	Vinkovačka 13, Trogir
Telephone number	0
E-mail address	zlusic@pfst.hr
Personal web page	
Year of birth	1971
Scientist ID	288482
Research or art rank, and date of last rank appointment	Senior research associate 15th June 2016
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor 14th December 2016
Area and field of election into research or art rank	Area of technical sciences, filed of traffic and transport technology, branch maritime and river transport
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies, University of Split
Date of employment	1st May 2005
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Maritime Navigation
Function	Head of Nautical Studies Department
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Maritime Studies in Rijeka
Place	Rijeka
Date	19th July 2010
INFORMATION ON ADDITIONAL TRAINING	
Year	2013 and 2017
Place	Portorož/Gdynia
Institution	Faculty of Maritime Studies in Portorož/ Gdynia Maritime University
Field of training	Application of navigation simulator in research and teaching
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Navigation I, II, III, IV (Nautical Studies, two and four-year university study programme) Maritime Navigation Systems and the Processes I, II, III, IV, (Maritime Navigation Systems and the Processes, four-year university study programme) Navigation I and II (Management Of Yachts And Marinas, two-year university study programme)

	Terrestrial Navigation (Nautical Studies/ Maritime Management/ Maritime Yacht and Marine Technologies/ Maritime Systems And Processes, undergraduate study programme) Astronomical Navigation (Nautical Studies/ Maritime Management/ Maritime Yacht and Marine Technologies/Maritime Systems and Processes, undergraduate and graduate study programme) Fundamentals of Navigation (Marine Engineering, undergraduate study programme) Elements of Navigation (Maritime Management /Maritime Yacht and Marine Technologies, undergraduate study programme) Onboard Internship(Nautical Studies, undergraduate study programme) Internship (Nautical Studies, undergraduate study programme)
Authorship of university/faculty textbooks in the field of the course	Lušić, Z.: Astronomska navigacija – teaching material, Faculty of Maritime Studies in Split, 2012. Lušić, Z.: Terestrička navigacija – authorized lectures, Faculty of Maritime Studies in Split, 2012. Lušić, Z.: Elementi plovidbe - authorized lectures, Faculty of Maritime Studies in Split, 2017.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Lušić, Z.: Astronomical position without observed altitude of the celestial body, The Journal of Navigation (0373-4633) 71 (2018); 454-466. 2. Lušić, Z.; Bakota, M.; Pušić, D.: Use of ECDIS in Astronomical navigation, ICTS 2018, Maritime Transport and Logistics Science Conference proceedings, 2018., 212-219. 3. Lušić, Z.; Bakota, M.; Mikelić, Z.: Human errors in ECDIS related accidents, Book of Proceedings-7th International Maritime Science Conference, 2017, 230-242 4. Lušić, Z. Čorić, M.: Models for Estimating the Potential Number of Ship Collisions, The Journal of Navigation (0373-4633) 68 (2015), 735-749. 5. Lušić, Z., Kos, S., Galić, S. Standardisation of Plotting Courses and Selecting Turning Points in Maritime Navigation, PROMET - Traffic&Transportation, 26 (2014), 313-322.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. Lušić, Z.; Bakota, M.; Čorić, M.; Skoko, I.: Seafarer Market – Challenges for the Future, Transactions on Maritime Science – ToMS (1848-3305), 8-1 (2019), 62-74 2. Lušić, Z.: Novi preddiplomski studij Pomorske nautike na Pomorskom fakultetu u Splitu, Kapetanov glasnik 29-2014, HHI/PFST, Split, 2014, 22-25.
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	• Scientific (in-house) project ‘’Primjena radio lociranja u SAR operacijama’’- University of Split - Faculty of Maritime Studies, 2018. - …project manager Assoc. Prof. Zvonimir Lušić, PhD • Scientific project "Istraživanje okolišnih utjecaja na rad satelitskih navigacijskih sustava u pomorskoj navigaciji", Faculty of Maritime Studies, University of Rijeka, principal investigator: Full Prof. Serđo Kos, PhD, Zvonimir Lušić, PhD member of a project team, 2019... • Project entitled Medusa-Pomorski obrazovni standard u brodarstvu i brodskom menadžmentu, project coordinator Faculty of Maritime Studies in Rijeka, project manager Assoc. Prof. Ana Perić Hadžić, PhD, partner Faculty of Maritime Studies in Split, PhD, Zvonimir Lušić, PhD member of a project team, 2019... • Project entitled "Internacionalizacija studijskih programa Morskog ribarstva i Vojnog pomorstva Sveučilišta u Splitu" (UP.03.1.1.02.0046), University of Split, project manager on behalf of the Faculty of Maritime Studies: Assoc. Prof. Merica

	Slišković, PhD, Zvonimir Lušić, PhD member of a project team, 2018... • Study entitled "Zajednička metodologija za analizu potencijalnih tokova prometa" and "Analiza potencijalnih tržišnih tokova luke Split" within international project CHARGE, subcontractor Faculty of Maritime Studies in Split, contractor L.U. Split, 2018.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Experience in teaching, training and education of seafarers since 2002, six years of sailing on ships, and as a part of formal education
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	0

First and last name and title of teacher	**Nikola Mandić, Ph.D.**
The course he/she teaches in the proposed study programme	Maritime Law
GENERAL INFORMATION ON COURSE TEACHER	
Address	Split, Ruđera Boškovića 37
Telephone number	021/619483
E-mail address	nmandic@pfst.hr
Personal web page	-
Year of birth	1985
Scientist ID	301594
Research or art rank, and date of last rank appointment	Research associate, 30th December 2015
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 2nd November 2016
Area and field of election into research or art rank	Interdisciplinary field of science, fields: law and traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st January 2008
Name of position (professor, researcher, associate teacher, etc.)	Assistant Professor
Field of research	maritime law, shipping agency and forwarding
Function	Head of Chair of Joint and Common Courses
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Mostar, Faculty of Law
Place	Mostar
Date	20th March 2015
INFORMATION ON ADDITIONAL TRAINING	
Year	-
Place	-
Institution	-
Field of training	-
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Maritime Law I, Maritime Law II, Traffic Law, Maritime Agencies and Shipping and Maritime Contracting, undergraduate and graduate study programmes Nautical Studies, Maritime Management and Maritime Yacht and Marine Technologies
Authorship of university/faculty textbooks in the field of the course	1. Amižić Jelovčić, P.; Primorac, Ž.; Mandić, N.: Obalna straža Republike Hrvatske – pravni okvir, Faculty of Law, Split, 2017. 2. Mandić, N.; Lovrić, I.: Pomorske agencije i otpremništvo, Faculty of Maritime Studies, Split, 2019.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Petrinović, R.; Mandić, N.; Siriščević, E.: The Importance of Maritime Law in Seafarer Training Pursuant to Amendments to the STCW Convention, Transactions on Maritime Science, god. 5, br. 1, Split, 2016., p. 53-64. 2. Skorupan Wolff, V.; Petrinović, R.; Mandić, N.: Marina Operator's Obligations from the Contract of Berth Acording to the Business Practices of Croatian Marinas, Book of Proceedings - 7th International Maritime Science Conference, Split, 2017. p. 104-111. 3. Mandić, N.: Modified Legal Framework and Opening of the Liner Shipping Market in the Republic of Croatia to Shipping Companies from the European Economic Area, Transactions on Maritime Science, god. 6, br. 2, Split, 2017, p. 140-146. 4. Petrinović, R.; Mandić, N.; Milošević Pujo, B.: Standardi sigurnosti plovidbe u lukama nautičkog turizma (marinama) s posebnim osvrtom na održavanje reda u luci, Poredbeno pomorsko pravo - Zbornik radova 2. Jadranska konferencija pomorskog prava, 25th - 27th May 2017, Opatija, Hrvatska, god. 57, No. 172, Zagreb, 2018. p. 177-204. 5. Mandić, N.: Novi Zakon o lučkim kapetanijama, Zbornik radova - 2. Međunarodna znanstvena konferencija pomorskog prava "Suvremeni izazovi pomorske plovidbe", Faculty of Law, Universitiy of Split, Split, 2018, p. 163-181. 6. Mandić, N.; Pijaca, M.; Zujić, M.: Inspection in Coastal Liner Shipping, Book of Proceedings - 8th International Maritime Science Conference, Faculty of Maritime Studies in Kotor and Faculty of Maritime Studies in Split, Kotor, 2019., p. 471-479.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	-
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Developing a Modern Legal and Insurance Regime for Croatian Marinas – Enhancing Competitiveness, Safety, Security and Marine Environmental Standards, coordinator: Croatian Academy of Sciences and Arts – Adriatic Institute, financed by Croatian Science Foundation (2016 – 2019)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-	Teaching Competences in Higher Education: Learning and Teaching, Faculty of Humanities and Social Sciences in Rijeka, 2017, 10 ECTS credits

didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	-

First and last name and title of teacher	**Ivan Matijević, Ph.D.**
The course he/she teaches in the proposed study programme	Military History History of Naval Warfare
GENERAL INFORMATION ON COURSE TEACHER	
Address	Poljička cesta 35, 21000 Split
Telephone number	+ 385 21 541 908
E-mail address	ivan.matijevic@ffst.hr
Personal web page	http://ffst.academia.edu/IvanMatijević
Year of birth	1982.
Scientist ID	320090
Research or art rank, and date of last rank appointment	Research Associate 15/05/2015
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Professor Assistant 29/04/2016
Area and field of election into research or art rank	Humanities, History
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Humanities and Social Sciences
Date of employment	29/04/2016
Name of position (professor, researcher, associate teacher, etc.)	Professor Assistant
Field of research	History of the Roman Empire, Roman army and administration
Function	Professor Assistant
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	Zadar University
Place	Zadar
Date	24/04/2015
INFORMATION ON ADDITIONAL TRAINING	
Year	2013.
Place	Rome
Institution	École française de Rome
Field of training	Roman military history
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	

COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Yes. Holding the course „The Art of Warfare in the Ancient World“, Department of History, Faculty of Humanities and Social Sciences Split.
Authorship of university/faculty textbooks in the field of the course	-
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	2018. The second season of archaeological excavations in the Episcopal Centre in Salona east of the *Porta Caesarea*, *Vjesnik za arheologiju i historiju dalmatinsku* 111, Split 2018, 167-177. 2017. An unpublished stele of a veteran of legio VII Claudia pia fidelis from Siculi, *Miscellanea Hadriatica et Mediterranea* 3, Zadar 2016 (2017), 125–138. 2017. Neobjavljeni natpisi iz Salone (II), *Tusculum* 10/1, Solin 2017, 57-69. 2017. O vojnoj karijeri centuriona Lucija Varija [---] po natpisu ILIug 2098 iz Salone, *Zbornik radova sa znanstvenog kolokvija Salonitanska muza Duje Rendića-Miočevića*, Solin, 29. lipnja 2016., *Tusculum* 10/2, Solin 2017, 199-210. 2016. *Singulares* of the Dalmatian governor, *Vjesnik za arheologiju i historiju dalmatinsku* 109, Split, 2016, 193-224.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	-
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	Faculty of Humanities and Social Sciences in Zadar, University of Split
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Dario Matika, Ph.D.**
The course he/she teaches in the proposed study programme	Basic Naval Principles and Parctices Military Leadership Military Management Naval Combat Systems I Naval Combat Systems II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Podrebernica 15b, 10000 Zagreb
Telephone number	097-6518-058
E-mail address	dario.matika1@gmail.com
Personal web page	

Year of birth	1961
Scientist ID	192005
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor, 2015
Area and field of election into research or art rank	Automation and Robotics, Security and Defence
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	
Date of employment	
Name of position (professor, researcher, associate teacher, etc.)	
Field of research	
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree
Institution	University of Maribor
Place	Maribor
Date	1996
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	https://www.bib.irb.hr/pregled/znanstvenici/192005 https://www.scopus.com/authid/detail.uri?authorId=6603108192 1. Mišigoj-Durakovic, M. Soric, M. Matika, D. Jukic, I. Durakovic, Z., *„Which is more important for reducing the odds of metabolic syndrome in men: Cardiorespiratory or muscular fitness'“,* Obesity Volume 24, Issue 1, pages 238-244, January 2016, Original Scientific Paper, Indexing in: *Thomson Reuters, Current Contents (CC)*

	2. Mihanović L., Matika D., Bernečić D., *"High Speed Radial Marine Diesel Engine Suitability Maintenance Model"*, Scientific Journal of Maritime Research 29 (2015), pages 133-142 ©Faculty of Maritime Studies Rijeka, 2015, Indexing in: SCOPUS 3. Mikulić D.,, Matika D., Mendek T., *„Detection and Neutralization of Threats from Improvised Explosive Devices (types CBRN-CIED)"*, Coll. Antropol. 38 (2014) Suppl. 1: 71–75, Original scientific paper,Indexing in: *Thomson Reuters, Current Contents (CC)* 4. Sekulić M., Milanović I., Bok D., Jukić I., Matika D., *„Substance use and misuse in the Croatian Army Special Forces: prevalence and influencing factors"*, International Journal of Occupational Medicine and Environmental Health January 2014, Volume 27, Issue 1, pp 123-131, Origunal scientific paper, Indexing in: *Thomson Reuters, Current Contents (CC), Springer* 5. Reljić M., Matika D., Gržan M., *„Dynamic Positioning of Offshore Anchor Hadling TUG Supply (AHTS) Vessels (UT 788 CD Project)"*, Shipbuilding Vol.65 No.1 March 2014 p.55-64, Professional paper, Indexing in: *Thomson Reuters ,Web of Science*
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. NATO project "MORUS - Unmanned system for maritime security and environmental monitoring" 2. FP 6 EU projektu "*European Illicit Trafficking Countermeasures Kit*", project No. 511471 " *3.* NATO project *"Control of Illicit Trafficking in Threat Materials and Humans"* NATO PST.EAP.SFPP 980526 *4.* FP 7 "*Developing Croatian Underwater Robotics Research Potential*" (CURE) project No. 229553 5. NATO edition(workshop) *„Complexity of National Security: Security Challenges and Opportunities"*
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Croatian Defence Academy - average 4,6 (maximum 5)

First and last name and title of teacher	**Petar Matić, Ph.D.**
The course he/she teaches in the proposed study programme	Automation of Marine Engine Systems
GENERAL INFORMATION ON COURSE TEACHER	
Address	Križanićeva 7
Telephone number	098 735 196
E-mail address	pmatic@pfst.hr
Personal web page	
Year of birth	1981.
Scientist ID	291716
Research or art rank, and date of last rank appointment	Research associate, 19th April 2017
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 10th October 2018
Area and field of election into research or art rank	Research associate in the area of technical sciences, field of electrical engineering, branch automatics and robotics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies in Split, University of Split
Date of employment	1st January 2007
Name of position (professor, researcher, associate teacher, etc.)	Assistant Professor
Field of research	Electrical engineering, Automatics
Function	Head of Maritime Electrical Engineering and Information Technologies Studies
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD (technical sciences/electrical engineering/automatics and robotics)
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split
Place	Split, Hrvatska
Date	12th December 2014
INFORMATION ON ADDITIONAL TRAINING	
Year	15th September 2012 – 13th July 2013
Place	MS Zuiderdam
Institution	Holland-America Line
Field of training	Marine electrical engineering
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language(5)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Ship automation 2, Automation of Marine Engine Systems 1, Marine Propulsion Plant Automation, Automation and Control, Automation in Maritime Transport, Marine Electrical Engineering and Electronics, Ship's Electrical Machines and Systems, Marine Electric Power Systems, Marine Electrical Devices, Marine Automatic Control Systems, Discrete Control Systems, Power Electronics, Micro and Personal Computers, Modelling and simulation in Electrical Engineering (Matlab/Simulink), Basics of Automation,

	Onboard Internship, Practicum of Ship System Management, Applied Computer Science1, Technical System Computer Control.
Authorship of university/faculty textbooks in the field of the course	R. Antonić, P. Matić, Osnove automatizacije i upravljanja, ISBN: 978-953-6655-44-1, Faculty of Maritime Studies in Split, 2007.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Vujović, Igor; Kuzmanić, Ivica; Matić, Petar. Environmental influence on the safety and reliability of electrical and communication systems // Engineering review, 37 (2017), 1; 57-66 2. Matić, Petar; Golub Medvešek, Ivana; Perić Tina. System Identification in Difficult Operating Conditions Using Artificial Neural Networks // TRANSACTIONS ON MARITIME SCIENCE, 4 (2015), 2; 105-112 doi:10.7225/toms.v04.n02.001 3. Šoda, Joško; Vujović, Igor; Matić, Petar. Wind Disturbance Suppression in Autopilot Design // Naše more : znanstveni časopis za more i pomorstvo, 62 (2015), 4; 243-246 doi:10.17818/NM/2015/4.1
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Dario Medić, Ph.D.**
The course he/she teaches in the proposed study programme	Passage Planning Ship Handling Technique
GENERAL INFORMATION ON COURSE TEACHER	
Address	Put Jakova Rotonda 21, 21218 Seget Donji
Telephone number	091/5288113
E-mail address	dmedic@pfst.hr
Personal web page	
Year of birth	1979
Scientist ID	346923
Research or art rank, and date of last rank appointment	Research associate, 4th December 2019
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 5th March 2020
Area and field of election into research or art rank	Area of technical sciences, filed of traffic and transport technology, branch maritime and river transport
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st December 2014
Name of position (professor, researcher, associate teacher, etc.)	Teaching/research assistant

Field of research	voyage planning, technique of operating a vessel, safety of maritime navigation
Function	Teaching/research assistant
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Zagreb, Faculty of Transport and Traffic Sciences
Place	Zagreb
Date	7th October 2019
INFORMATION ON ADDITIONAL TRAINING	
Year	2017
Place	Borre, Norway
Institution	Buskerud and Vestfold University College
Field of training	Application of navigation simulator in teaching
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	University of Split Faculty of Maritime Studies • Electronic Navigation, Nautical Studies undergraduate level • Electronic Navigation Instruments, Nautical Studies undergraduate level • Techniques of Operating a Vessel, Nautical Studies, undergraduate level • Passage Planning, Nautical Studies, undergraduate level
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Rino Bošnjak, Mihaela Bukljaš, Dario Medić, Srđan Vukša; "Optimization of ship's crew change schedule", Scientific Journals of the Maritime University of Szczecin, ISSN 1733-8670 (Printed), ISSN 2392-0378 (Online), DOI: 10.17402/349 Vol.59(2019), 131, p. 29-33 2. Dario Medić, Anita Gudelj, Natalija Kavran; "Overview of the Development of the Maritime Search and Rescue System in Croatia", Promet - Traffic&Transportation, ISSN 1848-4069 (Online), ISSN 0353-5320 (Tisak), DOI: 10.7307/ptt.v31i2.2895, Vol.31, No.2, p. 205-212, Midterm notes /scientific 3. Dario Medić, Zvonimir Lušić, Rino Bošnjak; "Comparative Analysis of the Maritime Venture Risk and the Cost of Averting a Fatality in the Republic of Croatia", Naše more : znanstveni časopis za more i pomorstvo, ISSN 1848-6320 (Online), ISSN 0469-6255 (Tisak), DOI: 10.17818/NM/2019/2.3, Vol.1, No.2, p. 62-69, Midterm notes /scientific 4. Natalija Kavran, Anita Gudelj, Dario Medić; "Petri Net Model for Drone Search and Rescue Actions at Sea", Advances in Decision Technology and Intelligent Information Systems,

	Volume XIX / Engemann, Kurt J. ; Lasker, George E. (ur.). Tecumseh, Canada: The International Institute for Advanced Studies (IIAS), 2018. p. 30-35 (invited lecture, international review, in extenso, scientific) 5. Zvonimir Lušić, Danijel Pušić, Dario Medić; "Analysis of the maritime traffic in the central part of the Adriatic", Transport Infrastructure and systems / Gianluca Dell'sAcqua ; Fred Wegman (ur.). Rome: CRC Press/Balkerma, 2017. p. 1013-1020.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Participated in the training entitled "Nastavni procesi i kompetencije nastavnika u visokom školstvu" ("Teaching processes and competencies of teachers in higher education")
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Distinguished scholarship award for outstanding contribution and advancement of knowledge in the field of decision technology, The International Institute for Advanced Studies in Systems Research and Cybernetics, Baden-Baden, 2018.

First and last name and title of teacher	**Luka Mihanović, Ph.D.**
The course he/she teaches in the proposed study programme	Militaray leaderships Military management Ship construction and combat resilience Ship maintenance Naval combat systems Navy propusion systems Military logistic systems management Maintenance Management Breakdown and Failure Diagnosis Fules, lubricat and water Graphical Drawing in Marine Engineering Military Logistic System Management Military Training I and II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Mosorska 29, 21251 Žrnovnica
Telephone number	098 581565
E-mail address	mlmihanovic@gmail.com
Personal web page	
Year of birth	1969.
Scientist ID	362052
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant professor, January 2017.
Area and field of election into research or art rank	The area of technical sciences, field traffic and transport technology, branch of maritime and river traffic.

INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Ministry of Defence of the Republic of Croatia Croatian Defence Academy "Dr. Franjo Tuđman"
Date of employment	05.01.1998.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Ship system construction, maintenance management
Function	Head of department
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree
Institution	University of Rijeka, Faculty of Maritime Studies
Place	Rijeka
Date	09.07.2015.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	University of Split, Faculty of Maritime Studies Maritime Economy/Marine Engineering/undergraduate Maritime Management/Marine Engineering/undergraduate Modeling and Simulating of the Processes (assistent) Management Information Systems (assistent) Maintenance Management (teacher) Breakdown and Failure Diagnosis (teacher) Marine Propulsion System Optimization (teacher) Management and Logistic Processes (teacher)
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Luka Mihanović, Dario Matika, Dean Bernečić: "High speed radial marine diesel engine suitability maintenance model" Pomorstvo: Scientific Journal of Maritime Research, Vol. 29, 2015 No. 2; 133-142, Luka Mihanović, Ivan Komar, Marijan Gržan: " Methodology analysyis using exploatation reliability with use of the main diesel engine" International Journal of Maritime Science & Technology "Our Sea", Vol.63 No.2 May 2016; 48-55 Luka Mihanović, Pančo Ristov , Goran Belamarić: "Use of new information technologies in the maintenance of ship systems" Pomorstvo: Scientific Journal of Maritime Research, Vol. 30, 2016 No. 1; 38-44

	Sunko, Tomislav; Komadina, Pavao; Mihanović, Luka Organisational structure and analysis of the contribution of the Coast Guard of the Republic of Croatia to maritime safety on the Adriatic Sea *// Pomorstvo : scientific journal of maritime research,* 32 (2018), 2; 312-319 doi:10.31217/p.32.2.16
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split students questionnaire - average 4,8 (maximum 5)

First and last name and title of teacher	**Jakša Mišković, M.Eng.**
The course he/she teaches in the proposed study programme	Seamanship I,Seamanship II, Safety at Sea, Work Organisation and Management on Board, On-board training I, On-board training III, On-board training IV, Hydrografic engineering, Naval combat system I, Naval combat System, Naval combat systems
GENERAL INFORMATION ON COURSE TEACHER	
Address	Odeska 17, Split
Telephone number	+385913329949
E-mail address	jaksa.miskovic@morh.hr
Personal web page	
Year of birth	1979.
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Lecturer, March 11th 2020.
Area and field of election into research or art rank	Technical science, Marine Engineering and Maritime Transport Technology
INFORMATION ON CURRENT EMPLOYMENT	

Institution where employed	Croatian Defence Academy “Dr. Franjo Tuđman”, MoD
Date of employment	01.05.2019.
Name of position (professor, researcher, associate teacher, etc.)	Lecturer
Field of research	Maritime & Hydrographic Research
Function	Lecturer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree in nautical engineering
Institution	University of Split, Faculty of Maritime Studies
Place	Split
Date	July 8th 2003.
INFORMATION ON ADDITIONAL TRAINING	
Year	1) 2019 2) 2020
Place	Split
Institution	1) Maritime training centre Atlantis 2) University of Zagreb University Computing Centre (SRCE) 2) CAE London Gatwick Centre
Field of training	1) Training under the terms of the STCW Convention 95 2) Training under the terms of the STCW Convention 95 2) E-learning Centre (CEU) 2) Maritime Crew Resource Management
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Hydrographic engineering, Nautical Studies, Master degree
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Kasum, J., Mišković, J., Pavić, I.: The role and importance of Regional electronic navigational charts coordinating centers in the provision of ENC services, 18th International Conference on Transport Science - ICTS 18, Portorož, Slovenija, 2018. 2. Pavić, I., Mišković, J., Sanchez Varela, Z.: Application of the MARPOL convention on warships, 18th International Conference on Transport Science - ICTS 18, Portorož, Slovenija, 2018. 3. Raffanelli, I., Mišković, J., Pavić, I.: Concepts of Recognition of Seagoing Service and Certificates to Crew Members of Warships in Accordance with STCW Convention, Transactions on Maritime Science (ToMS), Vol. 07 No 2, 2018. https://doi.org/10.7225/toms.v07.n02.010

Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Project of development of new Coastal Patrol Vessel, as member of Project Team, 2016. – 2018. 2. Project of infrastructure development and implementation of electronic navigational charts into MoD, as Project Coordinator, 2016. – 2020.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Workshop of pedagogical and didactical competences (Faculty of Humanities and Social Sciences)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	2018./2019. - University of Split students questionnaire - average grade 4,9 (maximum 5) - Hydrographic engineering 2019./2020. - University of Split students questionnaire - average grade 4,9 (maximum 5) - Hydrographic engineering 2019./2020. - University of Split students questionnaire - average grade 5,0 (maximum 5) – Pomorstvo I

First and last name and title of teacher	**Željko Mršić, Ph.D.**
The course he/she teaches in the proposed study programme	Police Powers and Their Application
GENERAL INFORMATION ON COURSE TEACHER	
Address	Korčulanska 3 Zagreb
Telephone number	01/2426-361, 098 230-109
E-mail address	zmrsic@fkz.hr
Personal web page	https://policijska-akademija.gov.hr/visoka-policijska-skola/organizacija-vps/nastavnici-94/dr-sc-zeljko-mrsic-profesor-visoke-skole/171
Year of birth	1963.
Scientist ID	250801
Research or art rank, and date of last rank appointment	Doctor of Science
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	College profesor, 08.2.2017.
Area and field of election into research or art rank	Security and Defense Sciences (5.13.)
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Ministry of the Interior, Zagreb Police College
Date of employment	September 12, 1983.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Security and Defense Sciences (5.13.)
Function	Professor
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree

Institution	University of Zagreb, Faculty of Law
Place	Zagreb
Date	April 11, 2015.
INFORMATION ON ADDITIONAL TRAINING	
Year	2005.
Place	Zagreb
Institution	Ministry of Finance, Association of Experts of the Republic of Croatia
Field of training	- training for acquiring professional certification of internal auditor in the public sector, which, after a sufficient number of audits, was completed in 2008, - Appointed at the Zagreb County Court in 2005 and re-appointed as a permanent court expert for road traffic and vehicle evaluation in 2009, 2013 and 2018, after two years of training under the mentorship of Dr. Sc. Krunoslav Franjkovic - more professional courses, seminars and symposia in the field of sweep safety, internal control, human resources management, etc.
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	- from 2008 until today at the Police Police College, the professional study of Criminology leads the course "Police Powers and Human Rights", and at the specialist study Criminology "Supervision of Police Work". - since 1996 he has been working as a contract lecturer for professional subjects in specialist courses at the Police Academy, and has taught or taught the following subjects and subjects: traffic accident test, removal of participants from the scene of the accident, traceology, expert witness, police communication, criminal law, criminal law procedural law, misdemeanor law, manner and tact of stopping the vehicle, etc.
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Željko Mršić, Police Profession in the Criminal and Criminal Procedure Law System // Croatian Legal Review, 20 (2020), 2; 2. Željko Mršić, Communication in the Use of Police Powers // Police and Security, 28 (2019), 1; 3. Željko Mršić; Radman Mario, Police Powers - Collection, Assessment, Storage, Data Processing and Use // Police and Security, 26 (2017), 1; 4. Željko Mršić, Protecting the Police to Protect Us // Croatian Legal Review, XVII (2017), 5; 5. Željko Mršić, Supervision of Police Work, Zagreb: Ministry of the Interior Police Academy, 2016.
Professional and scholarly articles published in the last five years in	

subjects of teaching methodology and teaching quality (5 works at most)	Željko Mršić, Misdemeanor Criminal Investigation or Methodology of Criminal Investigation of Misdemeanors? // Police and Security, 23 (2014), 3
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	- Leader of the MUP Task Force on Developing Police Occupational Standards - Leader of the working group for the development of career standards and ways of filling the positions of police officers - Member of the Commission for the Drafting of the National Security Strategy Proposal - Member of the Commission for the Drafting of the Draft Law on the Homeland Security System - Member of several working groups for drafting regulations
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	1996. Program of pedagogical-psychological education at the Faculty of Philosophy in Zagreb - Pedagogical Sciences
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Excellent 5

First and last name and title of teacher	**Rosanda Mulić, Ph.D.**
The course he/she teaches in the proposed study programme	Maritime Medicine Seamanship I
GENERAL INFORMATION ON COURSE TEACHER	
Address	Put Ričivice 25, 21217 Kaštel Novi
Telephone number	091 380 70 19
E-mail address	rosanda@pfst.hr
Personal web page	
Year of birth	1954
Scientist ID	203 393
Research or art rank, and date of last rank appointment	Scientific advisor in a permanent position 2015.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor 30.06. 2016.
Area and field of election into research or art rank	Biomedicine and health, public health and health care
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies, Split
Date of employment	6/1/ 2005
Name of position (professor, researcher, associate teacher, etc.)	Full professor
Field of research	Maritime medicine
Function	Full professor, Dean's adviser for Bilingual Studies
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	School of Medicine, University of Sarajevo
Place	Sarajevo, Bosnia and Hercegovina
Date	3/12/1991
INFORMATION ON ADDITIONAL TRAINING	
Year	2012.
Place	Edinburgh, UK
Institution	Institute for Public Health
Field of training	Public health
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English(4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Bosnian (5)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Teaching leader: Social Medicine, Epidemiology, Public Health – School of Medicine, Split University, University Department of Health Studies: teaching leader: Paliative Care, Gerontology Graduate Nursing study: teaching leader of Health promotion, University Department of Health Studies, Split University.

Authorship of university/faculty textbooks in the field of the course	1. Medicine for seafarers. Medicinska naklada , Zagreb 2003. 2. Medical First Aid. Handbook for Maritime Faculty and the Navy students. Redak, Split, 2019. 3. Medical Care. Handbook for Maritime Faculty and the Navy students. Redak, Split, 2020.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Mulić R, Sumić D. Request for professional medical aid on board ocean-going ships in the Republic of Croatia. IMHA. 2019;70(1):42-46. 2. Vukić L, Mulić R, Peronja I, Slišković M. Regulation for providing medical first aid/medical care on board ferry vessels in Croatia: Update proposal. TOMS. 2018;7(2):189-198. 3. Jerončić-Tomić I, Čerluka T, Vidan P, Mulić R. Stereotypes and health literacy in seafarers: Views of the students of medicine and maritime science on contraception. IMHA. 2018;69(3): 163-170. 4. Milat M, Mulić R. Epidemiological Characteristics of Tetanus in the Republic of Croatia. Liječn Vjesn 2016:138(7-8):188-194. 5. Lukšić I, Mulić R, Falconer R, Orban M, Sidhu S, Rudan I. Estimating global and regional morbidity from acute bacterial meningitis in children: assessment of the evidence. Croat Med J. 2013;54(6):510-8.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. Mulić R, Sumić D.Request for professional medical aid on board ocean-going ships in the Republic of Croatia. Int Marit Health. 2019;70(1):42-46. 2. Jerončić-Tomić I, Čerluka T, Vidan P, **Mulić R**. Stereotypes and health literacy in seafarers: Views of the students of medicine and maritime science on contraception. Int Marit Health. 2018;69(3):163-170. 3. Vukić L, Mulić R, Peronja I, Slišković M. Regulation for providing medical first aid/medical care on board ferry vessels in Croatia.2018;7(2):189-198. 4. Jerončić I, Mulić R, Nikolić J. Maritime Medicine and Medicine for Seafarers. Book Of Abstracts. 5th International Maritime Science Conference, Split, 2014;412-416. 5. Rogošić V, Mulić R, Vidan P. Importance of detection deffective color vision in professional traffic – sea navigation (merchant navy). Book Of Abstracts. 4th International Maritime Science Conference, Split, 2012;30.
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Internationalization of Navy and Sea Fisheries. Croatian Science Foundation. Team member. 2. International project: Modernizing and harmonizing maritime education in Montenegro and Albania. MarED, TEMPUS 2014-2017. Team member 3. Ministry of Sciencw and Education: „Maritime management for 21st Century“.Faculty of Maritime Studies, Split. Team member
The name of the programme and the volume in which the main teacher	Regular education and continuous lifelong training.

passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	1. Diploma of the Croatian Medical Association on the occasion of the 125th anniversary for a special contribution to nurturing the honorable tradition of the Croatian Medical Association, medical science and health in the Republic of Croatia, 1999; 2. University of Split. Award for outstanding contribution to scientific and professional work, 2015
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University questionnaire (University of Split). Average mark: 4,8 (maximum 5,0).

First and last name and title of teacher	**Ivica Pavić, Ph.D.**
The course he/she teaches in the proposed study programme	Safety at sea, Hydrographic Engineering, Crisis Management at Sea, Maritime Integrated Safety and Control Systems
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 37, Split
Telephone number	0915914048
E-mail address	ipavic71@pfst.hr
Personal web page	
Year of birth	1971
Scientist ID	307130
Research or art rank, and date of last rank appointment	research associate, 15th June 2016
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor 28th February 2017
Area and field of election into research or art rank	Area of technical sciences, field of traffic and transport technology, maritime and river transport
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	3rd July 2017
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Technical sciences, traffic and transport technology, Nautical Studies Department
Function	Professor
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Rijeka, Faculty of Maritime Studies
Place	Split
Date	1st June 2012
INFORMATION ON ADDITIONAL TRAINING	

Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Organization of Passenger Transport, Nautical Studies (undergraduate study programme) Hydrographic Engineering I and II, Maritime Yacht and Marine Technologies (graduate study programme) Cargo in Maritime Transport, Nautical Studies and Maritime Management (undergraduate study programme) Electronic Navigation, Nautical Studies Department, University of Zadar (undergraduate study programme)
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Raffanelli, I., Mišković, J., Pavić, I. Concepts of recognition of seagoing service and certificates to crew members of warships in accordance with the STCW Convention, Transactions on Maritime Science, Vol. 14, Split, 2018. 2. Pavić, I., Mišković, J., Sanchez-Varela, Z., Application of The MARPOL Convention on warships, Proceedings of 18th International Conference on Transport Science, ICTS 2018, Portorož, Slovenija, 2018. 3. Kasum, J., Mišković, J., Pavić, I., The role of regional electronic navigational charts coordinating centres in the provision of enc services, Proceedings of 18th International Conference on Transport Science, ICTS 2018, Portorož, Slovenija, 2018. 4. Ruščić, P., Pavić, I., Analiza IHO-ove sheme za zaštitu ENC podataka, Kapetanov glasnik, no. 33, Split, 2017. 5. Pavić, I., The Proposal of Additions to the Education of the Ship Security Officer, The Turkish Online Journal of Educational technology, August 2015, Special Issue for INTE 2015, Sakarya, 2015.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	"Nastavni proces i kompetencije nastavnika u visokom školstvu" (“Teaching process and teacher competences in higher education”), Edukacija, Faculty of Humanities and Social Sciences, University of Split, 2019.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Tomislav Perić, M.Eng.**
The course he/she teaches in the proposed study programme	Graphic Drawing in Marine Engineering Military Comunications and Information System Maritime Communications
GENERAL INFORMATION ON COURSE TEACHER	
Address	Put Duilova 23, Split
Telephone number	0989861208
E-mail address	tomislav_peric@net.hr
Personal web page	-
Year of birth	1969
Scientist ID	-
Research or art rank, and date of last rank appointment	/
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	/
Area and field of election into research or art rank	/
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Croatian Defence Academy
Date of employment	July 1st 2012.
Name of position (professor, researcher, associate teacher, etc.)	Associate teacher
Field of research	Military defence and security-intelligence; Electrical engineering
Function	Assistant
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master's degree in Electrical Engineering
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture (FESB)
Place	Split
Date	October 4th 2001.
INFORMATION ON ADDITIONAL TRAINING	
Year	1) 2012 2) 2018
Place	1) Zagreb
Institution	1) HVU 2) CARNet
Field of training	1) Staff Command School - „Blago Zadro" 2) E-learning Tutoring Academy (SRCE)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of	

course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	4. Karna, H.; Masnov, A.; Jurko, D.; Perić, T. Cross-Project Estimation of Software Development Effort Using In House Sources and Data Mining Methods - an Experiment. // Proceedings of the 27th Conference on Software, Telecommunications and Computer Networks (SoftCOM 2019) / Rožić, Nikola ; Begušić, Dinko (ur.). Split: IEEE, 2019. 6045971, 5 doi:10.23919/SOFTCOM.2019.8903752
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	E-learning Tutoring Academy – University e-learning platform Merlin (SRCE)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split students questionnaire 2019. Computer Applications Global Index: average: 4,7 / maximum 5

First and last name and title of teacher	**Ranka Petrinović, Ph.D.**
The course he/she teaches in the proposed study programme	Maritime Law
GENERAL INFORMATION ON COURSE TEACHER	
Address	Split, Ruđera Boškovića 37
Telephone number	021619472
E-mail address	ranka@pfst.hr
Personal web page	-
Year of birth	1960
Scientist ID	261204
Research or art rank, and date of last rank appointment	scientific advisor, 14th March 2013
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Distinguished Professor, 21st December 2017

Area and field of election into research or art rank	Area of social sciences, field of law
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	6th September 2002
Name of position (professor, researcher, associate teacher, etc.)	Distinguished Professor
Field of research	Maritime law
Function	-
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Split, Faculty of Law
Place	Split
Date	19th September 2005
INFORMATION ON ADDITIONAL TRAINING	
Year	-
Place	-
Institution	-
Field of training	-
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Maritime Law I, Maritime Law II, Maritime Law and Averages, Traffic Law and Transport Insurance, undergraduate and graduate study programmes Nautical Studies, Marine Engineering, Maritime Management and Maritime Yacht and Marine Technologies
Authorship of university/faculty textbooks in the field of the course	1. Luković, T.; Gračan, D.; Zec, D.; Jugović, A.; Petrinović, R.; Šerić, N.; Milošević-Pujo, B.; Asić, A.; Horak, S.; Marušić, Z.; Mađer, B.; Kundih, B.; Gržetić, Z.; Morgan, P.: Nautički turizam Hrvatske, Redak, Split, 2015. 2. Milošević Pujo, B.; Petrinović, R.: Pomorsko pravo za jahte i brodice, Faculty of Maritime Studies, Split, 2008. 3. Grabovac, I.; Petrinović, R.: Pomorsko pravo (Pomorsko javno, upravno i radno pravo), Faculty of Maritime Studies, Split, 2006.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Petrinović, R.; Mandić, N.; Siriščević, E.: The Importance of Maritime Law in Seafarer Training Pursuant to Amendments to the STCW Convention, Transactions on Maritime Science, god. 5, br. 1, Split, 2016., p. 53-64. 2. Skorupan Wolff, V.; Petrinović, R.; Mandić, N.: Marina Operator's Obligations from the Contract of Berth According to the Business Practices of Croatian Marinas, Book of Proceedings - 7th International Maritime Science Conference, Split, 2017. p. 104-111. 3. Petrinović, R.; Lovrić, I.; Perkušić, T.: The Role of P&I Insurance in Implementing the Amendments to the MLC 2014., Transactions on Maritime Science, vol. 6, no. 1, Split, 2017., p. 39-47.

	4. Petrinović, R.; Mandić, N.; Milošević Pujo, B.: Standardi sigurnosti plovidbe u lukama nautičkog turizma (marinama) s posebnim osvrtom na održavanje reda u luci, Poredbeno pomorsko pravo, god. 57, br. 172, Zagreb, 2018., p. 177-204. 5. Petrinović, R.; Mandić, N.: Can Marinas Qualify as Places of Refuge?, Transactions on Maritime Science. god. 8, br. 1. Split, 2019., p. 123-131.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	-
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Developing a Modern Legal and Insurance Regime for Croatian Marinas – Enhancing Competitiveness, Safety, Security and Marine Environmental Standards, coordinator: Croatian Academy of Sciences and Arts – Adriatic Institute, financed by Croatian Science Foundation (2016 – 2019)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	-
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	-

First and last name and title of teacher	**Danijel Pušić, M.Eng.**
The course he/she teaches in the proposed study programme	Seamanship I Seamanship II
GENERAL INFORMATION ON COURSE TEACHER	
Address	A.G. Matoša 14, 21000 Split
Telephone number	021619482
E-mail address	danijel.pusic@pfst.hr
Personal web page	
Year of birth	1970
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	senior lecturer - 2018.
Area and field of election into research or art rank	Technical sciences, traffic and transport technology, nautical sciences.
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	14.02.2018.
Name of position (professor, researcher, associate teacher, etc.)	senior lecturer
Field of research	Teaching in the field of nautical sciences, Senior lecturer for courses Elements of navigation, Maritime nautical engineering (dept. PTJM); Senior lecturer in courses, seminars, special education programme for seafarers; Reviewing of handbooks and scientific papers, proceedings of international conferences.
Function	
INFORMATION ON EDUCATION – Highest degree earned	

Degree	Master degree
Institution	Faculty of Maritime Studies in Split
Place	Split
Date	2009.
INFORMATION ON ADDITIONAL TRAINING	
Year	2012.
Place	Zagreb
Institution	Croatian Chamber of Engineers of Traffic and Transport Technology
Field of training	Professional division of maritime traffic and engineers of traffic on inland waterways, passed professional competencel examination, certified engineer, licence No. 121.
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English - 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian - 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Terrestrial navigation, Celestial navigation, undergraduate studies
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Pušić, Danijel; Vojković, Lea; Zlatimir, Bićanić: Sustav nadzora pomorske plovidbe // Zbornik radova Internacionalni Univerzitet Travnik / Travnik - Vlašić, Bosna i Hercegovina : Internacionalni univerzitet Travnik, 2012. 235-253 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni). 2. Tadić, Joško; Zlatimir, Bićanić; Danijel, Pušić: *Transport of dangerous substances in specific terms specialized agencies* // IMSC 2012 - 4. Međunarodna konferencija o pomorskoj znanosti / Split, 2012. 85-93 (predavanje, međunarodna recenzija, objavljeni rad, znanstveni). 3. Kos, Serđo; Pušić, Danijel; Brčić, David: *ProtectionandRisksofENCDataregardingSafetyofNavigation* // Advancesin Marine Navigation / Weintrit, Adam (ur.). London : Taylor & Francis Group, 2013. Str. 165-170. 4. Lušić, Zvonimir; Pušić, Danijel; Čorić, Mirko: *Maritime Traffic on Approach to Port of Split and Assessment of Collision and Grounding Risk*. // Transactions on Maritime Science (TOMS). 5 (2016) , 2; 130-140 (članak, znanstveni). 5. Lušić, Zvonimir; Bakota, Mario, Pušić, Danijel *Use of ECDIS in Astronomical navigation* // ICTS 2018, Maritime, Transport And Logistics Science Conference proceedings / Portorož: Faculty of Maritime Studies and Transport,

	Portoroz, 2018. str. 212-219 (predavanje, međunarodna recenzija, cjeloviti rad (in extenso), znanstveni)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. Galić, Stipe; Lušić, Zvonimir; Pušić, Danijel: Seafarers Market // International Journal of New Trends in Arts, Sports & Science Education (IJTASE) / Teoman Kesercioğlu (ur.).2012. 33-39 (predavanje,međunarodna recenzija,objavljeni rad,znanstveni).
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Scientific project (112-1121722-3066) "Istraživanje korelacije maritimno-transportnih elemenata u pomorskom prometu", glavni istraživač: prof.dr.sc. Serđo Kos, dr.sc. Danijel Pušić mag.ing.naut. u statusu istraživača. 2. Maritime study for concession fields-fish farms in the zone of Lamjana (G, B, VŠ1, VŠ2, VŠ3), contracting entity: Cromaris d.d., project deliverer: Faculty of Maritime Studies in Split, Split, 2014.,project leader: Assist. Prof. Zvonimir Lušić, Danijel Pušić M. Eng. Naut., professional team member. 3. Maritime study for construction of pontoon for accommodation of hydro-planes in part of Obala kneza Domagoja in the City port of Split, contracting entity: European Coastal Airlines d.o.o., project leader: Assoc.Prof. Pero Vidan, Split, 2015; Danijel Pušić M. Eng. Naut., professional team member. 4. Study of anchorage in the area of Split-Dalmatia County, phases I and II, for the Public institution for sea and karst, Split, leader: Assoc.Prof. Pero Vidan, Split, 2017 (phase I), 2019 leader Danijel Pušić (phase II).
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Project "Internationalisation of the study programmes of Marine fisheries and Naval maritime affairs at the University of Split", pedagogical-didactic education "Teaching process and competences of teachers in higher education" Split, PFST, from 18/02 to 22/02/2019.
PRIZES AND AWARDS	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Nikola Račić, Ph.D.**
The course he/she teaches in the proposed study programme	Marine Power Systems Marine Engines Navy Porpuslion System
GENERAL INFORMATION ON COURSE TEACHER	
Address	Slavonska 4, Split
Telephone number	091 370 1007
E-mail address	nikola.racic@pfst.hr
Personal web page	
Year of birth	23/02/1968
Scientist ID	188444
Research or art rank, and date of last rank appointment	Tenured scientific advisor - 04/07/2018.

Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Professor, 1st election 27/09/2018
Area and field of election into research or art rank	Technical sciences, mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies in Split
Date of employment	01/11/1991
Name of position (professor, researcher, associate teacher, etc.)	Full Professor
Field of research	Marine engineering
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Rijeka, Faculty of Engineering
Place	Rijeka
Date	10/10/2008
INFORMATION ON ADDITIONAL TRAINING	
Year	2008
Place	Split
Institution	Brodosplit, Tvornica dizel motora d.o.o.
Field of training	Marine engineering, marine engines, engine testing
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English – 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian – 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Undergraduate Marine engineering: Marine steam generators and heat turbines, Undergraduate Nautical studies: Marine power systems, Undergraduate Marine engineering: Marine transshipment systems; Graduate Marine engineering: Propulsion systems, Power systems in maritime affairs
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Perić T., Račić N., Mihanović V.: Evaluation model of marine pollution by waste water from Cruise Ships, Teorija i praksa brodogradnje i pomorske tehnike, volume 70/3, pp. 79-92, 2019. 2. Vukičević M., Račić N., Ivošević Š.: Piston ring material in a Two-stroke engine which sustains wear due to catalyst fines, Teorija i praksa brodogradnje i pomorske tehnike, volume 70/2, pp. 155-169, 2019. 3. N. Matulić, N. Račić, G. Radica,: Supercharged engine using Turbine standalone exhaust gas recuperation system, Teorija i praksa brodogradnje i pomorske tehnike 68 (3), 103-118, 2017. 4. Račić, N., Radica, G., Lušić, F.: Simulation of the Marine Engine Performance With the Purpose of Predicting Parameters, 6th IMSC Conference 2014, Solin, Croatia.

	5. Grljušić, M., Medica, V., Račić, N.: Thermodynamic Analysis of a Ship Power Plant Operating with Waste Heat Recovery through Combined Heat and Power Production, Energies 2014, 7(11), 7368-7394; doi:10.3390/en7117368.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	- 2002.-2013. Researcher on project No. 0069009, financed by Ministry of Science, Education and Sport of the Republic of Croatia, title: Numerical simulations and optimisation of diesel-engines. - 2013. - Researcher on Croatian-Montenigrin project of the scientific branch of marine engineering: Possibility of reduction of polluting emissions from ships in the Montenigrin and Croatian parts of the Adriatic by implementation of Marpol Convention Annex VI. - 2014. – Researcher on project No. 544257-TEMPUS-1-2013-1-ME-TEMPUS-JPCR “Mared”.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Gojmir Radica, Ph.D.**
The course he/she teaches in the proposed study programme	Marine Engines, Marine Auxiliary Engines and Machinery, Navy Porpuslion System
GENERAL INFORMATION ON COURSE TEACHER	
Address	Tolstojeva 43
Telephone number	091 430 5955
E-mail address	gojmir.radica@pfst.hr
Personal web page	https://nastava.fesb.hr/nastava/nastavnici/detalji/goradica
Year of birth	1962
Scientist ID	245370
Research or art rank, and date of last rank appointment	Senior research associate, 15/09/2010
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor with tenure, 28/06/2018
Area and field of election into research or art rank	Technical sciences – Marine engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture – University of Split
Date of employment	01/10/2011
Name of position (professor, researcher, associate teacher, etc.)	Full professor

Field of research	Heat and hydraulic engines. Marine power systems, marine plant optimisation, management and control of marine engines, energy efficiency of modern marine power systems.
Function	Chair for Heat Engines, Head of Laboratory for Heat Engines at Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture – University of Split
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	Faculty of Mechanical Engineering and Naval Architecture – University of Zagreb
Place	Zagreb
Date	21/06/2004
INFORMATION ON ADDITIONAL TRAINING	
Year	1993 – 2010
Place	Malaga, Spain; Mossville-Lafayet, USA, Larne, U.K., C.G.T.- Italy, Winterthur - Switzerland, Augsburg – Germany
Institution	CATERPILLAR , PERKINS,Wartsila-Sulzer, MAN-B&W, project and research dept.
Field of training	New technologies applied to diesel and gas engines and generators; Development projects in the field of marine engine monitoring; System design, vibration and testing of diesel engines; Development and testing of fuel injection systems.
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (3)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	- Expert systems for diagnostics and engine optimization, 2009-2011, Lectures, Postgraduate interuniversity scientific doctoral study, (Faculty of Maritime Studies, University of Rijeka), Introduction of a new course; - Heat engines, 2010-present, Lectures, Undergraduate study Mechanical Engineering - Faculty of Electrical Engineering and Naval Architecture, University of Split, 45 hours, Innovated content; - Thermal Machines, 2010-present, Lectures, Graduate Study of Industrial Engineering - Faculty of Electrical Engineering and Naval Architecture, University of Split, 30 hours, Innovated content; - Small boat plant, 2011-present, Lectures, Undergraduate Study- Naval Architecture - Faculty of Electrical Engineering and Naval Architecture, University of Split, 30 hours, Innovated content; - Ship machines and devices, 2013- today, Lectures, Undergraduate Study- Naval Architecture - Faculty of Electrical Engineering and Naval Architecture, University of Split, 30 hours; - Ship propulsion, 2011 - today, Lectures, Professional study of Naval Architecture - Faculty of Electrical Engineering and Naval Architecture, University of Split, 30 hours, Innovated content;

	- Expert systems for diagnostics and optimization, 2010-present, Lectures, Postgraduate University Scientific Doctoral Study, (Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split), 30 hours, Introduction of a new course - Fault diagnosis, 1995-2018, Lectures, auditory exercises, Undergraduate study - Faculty of Maritime Studies, University of Split (30 + 15 hours), introduction of new innovative methods recognized and positively evaluated by the expert committee at the Faculty of Maritime Studies. Split; - Maintenance systems, 2009-2013, Lectures, auditory exercises. Graduate study - Faculty of Maritime Studies, University of Split (30 + 15 hours), Introduction of a new course and introduction of new innovative methods recognized and positively evaluated by the expert committee at the Faculty of Maritime Studies, University of Split; - Intelligent engines, 2009-present, Lectures, auditory exercises, Graduate study - Faculty of Maritime Studies, University of Split (30 + 15 hours), Introduction of a new course; - Plant maintenance and management, 1995-2008. Lectures, auditory exercises, Undergraduate study - Faculty of Maritime Studies, University of Split (30 + 15 hours), Introduction of new units; - Marine engines, 2009-present, Lectures, Undergraduate study - Faculty of Maritime Studies, University of Split (30 hours), Innovated content, introduction of new chapters; - Ship steam generators, 2010-2011, Lectures, auditory exercises, Undergraduate study Naval Engineering and Maritime Technology, University of Zadar, Maritime Department (45 + 15 hours), Innovated content, introduction of new chapters; - Ship heat turbines, 2010-2011, Lectures, auditory exercises, Undergraduate study Naval Engineering and Maritime Technology, University of Zadar, Department of Maritime Studies (45 + 15 hours), Innovated content, introduction of new chapters; - Heat engines I and II, 1985-1992, Exercises, Graduate study of Mechanical Engineering-Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split (30 hours);
Authorship of university/faculty textbooks in the field of the course	Diagnosis of malfunctions of the four-stroke engine and The Maintenance System were positively assessed by the expert committee of the Faculty of Maritime Studies, University of Split
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Matulić, N., Radica, G. & Nižetić, S. Engine model for onboard marine engine failure simulation. J Therm Anal Calorim (2019). https://doi.org/10.1007/s10973-019-09118-3, 2019 2. Grljušić, M., Tolj, I., Radica, G.,An Investigation of the Composition of the Flow in and out of a Two-Stroke Diesel Engine and Air Consumption Ratio, Energies 2015, 10(6), 4273-4299; DOI: 10.3390/en10060805 3. Matulic, N.; Radica, G.; Nizetic, S.: Thermodynamic analysis of active modular internal combustion engine concept: Targeting efficiency increase and carbon dioxide emissions reduction of gasoline engines, INTERNATIONAL JOURNAL OF ENERGY RESEARCH Volume: 42 Issue: 9, Pages: 3017-3029, Jul., 2018. 4. Kozina, A.; Radica, G.; Nizetic, S.: Increasing engine efficiency at part load with the exhaust valve control: a simplified modelling approach, INTERNATIONAL

	JOURNAL OF EXERGY Volume: 26 Issue: 1-2 , Pages: 131-153, 2018. 5. Ante Muše, Gojmir Radica, Nikola Matulić, Nikola Račić, Multi-zone combustion model at slow speed marine Diesel engine, 23rd Symposium on the Theory and Practice of Shipbuilding, SORTA 2018, Book of proceeding, p: 370-381; ISBN: 978-953-290-085-9
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1.AUTORE; EC FCH-JU Horizon2020; 2015-2018 2.Giantleap; EC FCH-JU Horizon2020: 2016-2019 3.Hydride 4Mobility; EU RISE Horizon 2019;2017-2020 4.Research and development of the hydrogen energy system in conjunction with renewable energy sources, EU Structural Funds, 2014-2016
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Training: Implementation of learning outcomes in the development of study programs and curricula; Linking learning outcomes and teaching methods-Prof. dr. sc. Izabela Sorić, Department of Psychology, University of Zadar, and Doc. dr. sc. Slavica Šimić Šašić, Department of Teacher Education, University of Zadar, total 24 hours; within the IPA IV project: "ME4CataLOgue - Croatian catalog of knowledge, skills and competencies for mechanical engineering studies based on learning outcomes (for undergraduate, graduate and doctoral studies)", active participant in the project from 9.2013-2.2015.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Gold medal for a patent at the 8th Innovation Fair INVENTUM 2014.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	The grade from student evaluation is always higher than average.

First and last name and title of teacher	**Pančo Ristov, Ph.D.**
The course he/she teaches in the proposed study programme	Process Modelling and Simulation
GENERAL INFORMATION ON COURSE TEACHER	
Address	Zrinsko – Frankopanska 38
Telephone number	
E-mail address	panco.ristov@pfst.hr
Personal web page	
Year of birth	23.06.1954.
Scientist ID	309891
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant professor, February 6th, 2014.
Area and field of election into research or art rank	Area of technical sciences, field of traffic and transport technology

INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies Split
Date of employment	1.9.2007.
Name of position (professor, researcher, associate teacher, etc.)	professor
Field of research	Research, development, application and maintenance of information resources in the field of maritime industry
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree – technical sciences, field of maritime transport - applied IT in maritime transport
Institution	Faculty of Maritime Studies Rijeka
Place	Rijeka
Date	
INFORMATION ON ADDITIONAL TRAINING	
Year	1983 – 1987; 2006 – 2007
Place	Stockholm; Odense
Institution	Philips Elektronikindustrier AB – Defence Electronics - Sweden ; Project „CARD 2003 – Modern Approach towards Application Competencies / (Odense - Denmark)
Field of training	Surveillance, tracking and organisation of maritime traffic assisted by computer systems Modern control technologies and innovation processes
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian/Macedonian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 3/4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Russian 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Applied Computer Sciences I and II (BS and PEIT) Computer System Design in Maritime Transport Process Modelling and Simulation (PN, PEIT, PM) Marine Integrated Computer Systems (PM and PEIT)
Authorship of university/faculty textbooks in the field of the course	Munitić, A., Ristov, P., Gudelj Bolanča, A., Nadrljanski, M.,: „Primjena elektroničkih računala“, Faculty of Maritime Studies University of Split, Split, 2007., 400 stranica. Munitić,A . Ristov, P., „Sistemska dinamika“, Faculty of Maritime Studies University of Split , Split, 2008., 550 stranica. Tomašević, M., Ristov,P., Stanivuk,T.: „Metodologija znanstvenog istraživanja statističke metode u istraživanju“, Faculty of Maritime Studies University of Split, Split, 2007., 410 stranica.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Pančo, Ristov; Ante, Mrvica; Pavao, Komadina, Sigurnost podataka i informacija u sustavima nadzora i upravljanja pomorskim prometom, Naše more, Znanstveno-stručni časopis za more i pomorstvo, Vol 63, “, broj 1/2016. ISSN 0469-6255, str.1-8.

	Pančo, Ristov; Ante, Mrvica; Pavao, Komadina; Vinko, Tomas, Informacijski sustav podržan RFID tehnologijom u procesu prodaje i kontrole karata u brodskom putničkom prometu, Naše more, Znanstveno-stručni časopis za more i pomorstvo, Vol 62, ", broj 1/2015. ISSN 0469-6255, str.8 – 15. Pančo, Ristov; Ante, Mrvica; Pavao, Žanić Mikuličić Jelena, Application of service oriented architecture of information communication system in nautical ports, Proceedings of 38rd international convention – Digital Economy and Government , Local Government, Public Services / DE – GLGPS, May 25-30. 2015, Opatija – Adriatic Cost, Croatia. Pančo, Ristov; Toni, Mišković; Ante, Mrvica, RFID based access control system, Proceedings of 38rd international convention – Digital Economy and Government , Local Government, Public Services / DE – GLGPS, May 25-30. 2015, Opatija – Adriatic Cost, Croatia. Pančo Ristov; Mile Perić; Vinko Tomas, The implementation of cloud computing in shipping companies, Pomorstvo: Scientific Journal of Maritime Research, Vol.28 No.1 Lipanj 2014. Pančo, Ristov;Pavao, Komadina; Vinko, Tomas, Model for reliability, availability and safety of the control centers of vessel traffic management and information systems, PROMET – Traffic & Transportation Scientific Journal on Traffic and Transportation Research .
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	Pančo, Ristov; Ante, Munitić; Veljko, Plazibat, Primjena metodologije sustavne dinamike u srednjoškolskom i visokoškolskom edukacijskom procesu, Proceedings of 33rd international convention on information and communication tehnology, electronics and microelectronics – CE, ISBN 978-953-233-054-0, Opatija, May 24-28,2010. Munitić, Ante; Ristov, Pančo; Ivona Milić Beran, Dinamika procesa učenja uz pomoć kibernetičkih sustava, „Naše more", broj 3-4/2009, Godište 56. ISSN 0469-6255, str.118-129.
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Digital Electronic Logistic Maritime Cluster, Process Orchestration Information and communication technologies (ICT) in intelligent maritime systems
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	Project „CARD 2003 – Modern Approach towards Application Competencies / (Modern control technologies and innovation processes) Model VET Centar Odense – Danska (Department for innovation and internationalization) Supplementary teacher education programme (Faculty of Science, Split)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in	

the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Damir Sedlar, Ph.D.**
The course he/she teaches in the proposed study programme	Technical Mechanics 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32, 21000 Split
Telephone number	021/305-967
E-mail address	dsedlar@fesb.hr
Personal web page	http://marjan.fesb.hr/~dsedlar/
Year of birth	1976.
Scientist ID	248913
Research or art rank, and date of last rank appointment	Research scientist, Jul, 2018.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate professor, September, 2017.
Area and field of election into research or art rank	Technical Sciences, field fundamentals technical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	2001
Name of position (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Dynamics, finite element method, noise and vibration, optimization
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	2009
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	- Tomac, Ivan; Lozina, Željan; Sedlar, Damir: Extended Morlet-Wave damping identification method, International Journal of Mechanical Sciences, 2017 - Sedlar, Damir; Lozina, Zeljan; Bartulovic, Andjela: Nonlinear static isogeometric analysis of cable structures, Archive of Applied Mechanics, 89, 2019 - Lozina, Željan; Sedlar, Damir; Tomac, Ivan: Isogeometric approach to the dynamics of the catenary exposed to large displacements, Acta mechanica, 230, 2019 - Lozina, Željan; Sedlar, Damir; Tomac, Ivan: An Identification of the unbalanced magnetic pull in generator at excitation and the hydropower machine model validation, MATEC Web of Conferences, 211, 2018. - Boban, Bruno; Sedlar, Damir: Control of Electric Power Steering System – OpenModelica Simulation, SpliTech 2019, 2019
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Me4CataLOgue
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Dean Sumić, M.Eng.**
The course he/she teaches in the proposed study programme	Marine Electrical Engineering and Electronics I Marine Electrical Engineering and Electronics II Maritime Communications
GENERAL INFORMATION ON COURSE TEACHER	
Address	Berislavićeva 6, Split
Telephone number	091 380 7003

E-mail address	suma@pfst.hr
Personal web page	www.pfst.hr/~suma
Year of birth	1972
Scientist ID	314580
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Lecturer 1st February 2016
Area and field of election into research or art rank	area of technical sciences, filed of traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st January 2003
Name of position (professor, researcher, associate teacher, etc.)	Lecturer
Field of research	Maritime Communications
Function	Lecturer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree in Engineering
Institution	University of Split, Faculty of Maritime Studies
Place	Split
Date	15th June 2007
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Maritime Communications; Maritime Communications 1 and 2, Nautical Studies, Maritime Systems and Processes, Maritime Yacht and Marine Technologies, Maritime Management; university study programme, university undergraduate study programme
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Sumić, Dean; Peraković, Dragan; Jurčević, Marinko. Contribution to ECDIS Reliability using Markov Model. // Transactions on Maritime Science ToMS. 3 (2014) , 2; 149-157. 2. Sumić, Dean; Peraković, Dragan; Jurčević, Marinko Optimizing Data Traffic Route for Maritime Vessels Communications // Procedia Engineering (1877-7058) 100 (2015); 1286-1293 3. Sumić, Dean; Rosić, Marko; Škorput, Pero. Decision Making Example for On-Board Distress Situation Based on Agents //

	Proceedings of the 29th DAAAM International Symposium / Katalinic, Branko (ur.). - Vienna: DAAAM International Vienna, 2018. 0553-0558 (ISBN: 978-3-902734-20-4). 4. Rosić, Marko; Sumić, Dean; Maleš, Lada. Firefighting On-Board Ship Modelling Based on Agents // IMSC 2019 Book of Proceedings 8th International Maritime Science Conference / lvošević, Špiro ; Vidan, Pero (ur.). Kotor : Faculty of Maritime Studies in Kotor University of Montenegro & Faculty of Maritime Studies in Split University of Split, 2019. 223-228 5. Mulić, Rosanda; Sumić, Dean. Request for professional medical aid on board ocean-going ships in the Republic of Croatia. // International maritime health. 70 (2019) , 1; 42-46
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	VIF-application of radiolocation in SAR operations, project manager: Assoc. Prof. Zvonimir Lušić, PhD , 09th March 2018 – 9th March 2020
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Project entitled Internacionalizacije studijskih programa Morskog ribarstva i Vojnog pomorstva na Sveučilištu u Splitu, Pedagogical and didactic education, from 11th February until 15th February 2019
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Merica Slišković, Ph.D.**
The course he/she teaches in the proposed study programme	Scientific Research Methodology Sea and Marine Environment Protection
GENERAL INFORMATION ON COURSE TEACHER	
Address	Cesta mira 18 b, Split
Telephone number	0958354731
E-mail address	merica.sliskovic@pfst.hr
Personal web page	
Year of birth	1973
Scientist ID	252443
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor, November 28th 2019.
Area and field of election into research or art rank	Biotechnology, Ecology and environmental protection
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	01.11.1998.
Name of position (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Ecology and environmental protection of sea
Function	Head of the chair

INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree
Institution	University of Zagreb, Faculty of Agronomy
Place	Zagreb
Date	February 23rd 2007.
INFORMATION ON ADDITIONAL TRAINING	
Year	1) 2016 2) 2005 i 2012 3) 2007
Place	
Institution	1) LLoyds Maritime Academy, London (United Kingdom) 2) Universitat Politecnica de Catalunya (UPC) – online 3) CARNet
Field of training	1) Marine Pollution Prevention and Management Course 2) Modelling of ecological systems and Management of renewable resources; Advanced Course in System Dynamics 3) E-learning Tutoring Akademiju (SRCE)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Sea and marine environment protection Bachelor degree – Methodology of Scientific Research - Master degree
Authorship of university/faculty textbooks in the field of the course	

Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Čampara, L.; Slišković, M.; Jelić Mrčelić, G. Key Ballast Water Management Regulations With a View on Ballast Water Management Systems Type Approval Process. Naše more, 66 (2019), 2; 78-86 doi:10.17818/nm/2019/2.5 2. Slišković, M.; Povž, M.; Jakšić, G.; Piria, M.; Jelić Mrčelić, G. Biometric traits and ecology of sichel, Pelecus cultratus (Linnaeus, 1758) with notes on its recent status in the middle flow of the Danube river tributaries (Slovenia and Croatia), Pakistan J. Zool., vol. 50(0), (2018). DOI: http://dx.doi.org/10.17582/journal.pjz/2018.50 3. Slišković, M.; Ukić Boljat, H.; Jelaska, I.; Jelić Mrčelić, G. Review of Generated Waste from Cruisers: Dubrovnik, Split, and Zadar Port Case Studies // Resources, 7 (2018), 4; 72, doi:10.3390/resources7040072 4. Soldo, A.; Fredotović, M.; Šaran, A.; Slišković, M.; Mihanović, Vice; Jelić Mrčelić, Gorana. Economic and social impact of marine sport and recreational fisheries in Croatia.Croatian journal of fisheries. Ribarstvo, 76 (4) (2018),176-198. DOI:10.2478/cjf-2018-0019 5. Giamattista, G.; Slišković, M.; Violante, A.C.; Vukić, L. 2015. Best available techniques (BATs) for oil spills response in the Mediterranean Sea: calm sea and presence of economics activitiesEnvironmental Science and Pollution Research ISSN 0944-1344 DOI: 10.1007/s11356-015-5543-y
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Internationalisation of Higher Education in Croatia, Internationalisation of Study Programmes of Marine Fisheries and Military Nautical Studies at the University of Split as Leader of 3 rd project element 2. Maritime education standard in shipping and ship management (MEDUSA) as Project Coordinator 3. Maritime management for the 21st century – sustainable and intelligent development of the coastal zone through the development of professions and qualification standards in the field of Maritime management and the development of the relative university graduate study as Expert Project Manager 4. Development of qualification and innovative methods of competence acquisition in Logistics and Maritime transport (KIKLOP) as Project Coordinator 5. TEMPUS "Modernizing and harmonizing maritime education in Montenegro and Albania" MarED, Applicant University of Montenegro, Partner University of Split as researcher
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	*CARNet E-learning Tutoring Akademiju* (SRCE) *Active learning in STEM education* (University of Split Faculty of Science and Penn State University) *Workshops of pedagogical and didactical* competences (Faculty of Humanities and Social Sciences)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	2019. University of Split Award for the scientific contribution in the area of biotechnology
Results of student evaluation taken in the last five years for the course that	University of Split students questionnaire - average 4,5 (maximum 5)

is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Tomislav Sunko, M.Eng.**
The course he/she teaches in the proposed study programme	On-board training II, Seamanship I, Seamanship II, Seamanship III, Safety at Sea, Astronomical Navigation, Terrestrial Navigation, Tactical Navigation
GENERAL INFORMATION ON COURSE TEACHER	
Address	Karamanova 4, Split
Telephone number	+385 91 506 16 89
E-mail address	tomosunko@gmail.com
Personal web page	
Year of birth	1973
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Croatian Defence Academy “Dr Franjo Tuđman”
Date of employment	July 2012. Croatian Defense Academy “Dr Franjo Tuđman”
Name of position (professor, researcher, associate teacher, etc.)	Seamanshiplecturer
Field of research	Naval systems
Function	Lecturer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degreein maritime transport, maritime nautical department
Institution	University of Split, Faculty of Maritime Studies
Place	Split
Date	8th July 2008.
INFORMATION ON ADDITIONAL TRAINING	
Year	1994
Place	Split
Institution	Harbour Master's Office Split (Republic of Croatia - Ministry of Maritime Affairs, Transport and Communications)
Field of training	Merchant Navy Lieutenant (Passed the State Maritime Exam)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language,(2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language,(2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Seamanship I (Naval studies) - Master degree Seamanship II (Naval studies) - Master degree Seamanship III (Naval studies) - Master degree Safety at sea (Naval studies) - Master degree
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Sunko , T., Komadina, P., Mihanović, L.: *Organisational structure and analysis of the contribution of the Coast Guard of the Republic of Croatia to maritime safety on the Adriatic Sea*, Pregledni rad, Pomorstvo, Vol. 32 No. 2, 2018., str. 312-319. Tomislav Sunko ORCID icon orcid.org/0000-0002-9287-5642; Croatian Military Academy "Dr Franjo Tuđman", Zagreb, Croatia. Hrčak ID: 213562.URI: https://hrcak.srce.hr/213562 2. Tomislav Sunko, Slaven Sučević: *POČETAK STUDIJA „VOJNO POMORSTVO"*, Kapetanov glasnik, str. 51 do 54, broj 34., svibanj 2018., Split., 3. Sunko , T., Mihanović, L., Kodžoman I.: *Readiness of the Croatian Navy in case of migrant crisis escalation at sea*, VIII. Savjetovanje o morskoj tehnologiji – in memoriam akademiku Zlatku Winkleru 2019.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split students questionnaire 2018/2019 - average 4,9 (maximum 5) University of Split students questionnaire 2019/2020 - average 5,0 (maximum 5)

First and last name and title of teacher	**Tino Sumić, M.Eng.**
The course he/she teaches in the proposed study programme	On-board training I On-board training II On-board training III On-board training IV Seamanship I

	Safety at Sea Breakdown and failue diagnostics Marine engine Marine engine systems Marine Auxiliary Engines and Machinery Navy propuslion system Simulator and On-Board Training II Simulator and On-Board Training III
GENERAL INFORMATION ON COURSE TEACHER	
Address	Mišina 13, Split
Telephone number	0917518990
E-mail address	tinosumic@net.hr
Personal web page	
Year of birth	1968.
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	Scientific field of technical sciences, field of mechanical engineering, branch of marine engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	MORH
Date of employment	07.01.1998.
Name of position (professor, researcher, associate teacher, etc.)	Associate teacher
Field of research	Chair of Naval Operations - Naval Operations Division
Function	Technical teacher
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master's degree in Marine Engineering
Institution	University of Dubrovnik, Faculty of Maritime Studies
Place	Dubrovnik
Date	09.05.1994.
INFORMATION ON ADDITIONAL TRAINING	
Year	1)1995.
Place	1)Split
Institution	1) Harbour master´s office
Field of training	1) Marine engineer
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was	

offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	"Marine propulsion machinery", "Marine auxiliary systems"
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Sumić, T.; Radica, G.; Lalić , B. Development of diesel-electric propulsion, Association of Marine Engineers - Keeping pace with time, Newsletter No. 51/52., Split, 06.12.2015.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	-*Workshops of pedagogical and didactical* competences (Faculty of Humanities and Social Sciences - Split), -"Training for teachers and administrative staff" within the EU project ME4CataLOgue (Mechanical Engineering for Catalog) - Croatian catalog of knowledge, skills and competences for mechanical engineering studies based on learning outcomes (for undergraduate, graduate and doctoral studies).
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split students questionnaire - average 5 (maximum 5)

First and last name and title of teacher	**Full ptrofessor, Antonio Šarolić, Ph.D.**
The course he/she teaches in the proposed study programme	Military communication-information systems
GENERAL INFORMATION ON COURSE TEACHER	
Address	FESB, Ruđera Boškovića 32, 21000 Split
Telephone number	021 305 700
E-mail address	antonio.sarolic@fesb.hr
Personal web page	https://nastava.fesb.hr/nastava/nastavnici/detalji/asarolic
Year of birth	1971.
Scientist ID	223430
Research or art rank, and date of last rank appointment	Scientific Advisor, 2016.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Profesor, 2016.
Area and field of election into research or art rank	Area: Technical Sciences, Field: Electrical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	1.1.2006.
Name of position (professor, researcher, associate teacher, etc.)	Full Profesor

Field of research	Applied electromagnetics, wireless communications
Function	Head of Chair for Applied Electromagnetic Fields
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	FER, University of Zagreb
Place	Zagreb
Date	2004.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Wireless communications *(graduate study Electronics and computer engineering)* Antenna systems *(graduate study Communication-information technologies)* Antennas, Maritime radiocommunications *(graduate study Communication-information technologies, undergraduate professional study Electronics)* Electromagnetic compatibility *(graduate study Communication-information technologies, graduate study Electronics and computer engineering)*
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Šarolić, Antonio: Wind Turbine Radar Cross Section for Air Traffic Control Secondary Surveillance Radar // Proceedings of European Microwave Conference in Central Europe - EuMCE 2019, Prag, 2019. pp. 1-4 Matković, Anđela; Šarolić, Antonio: Near Electric Field Around the Shipboard Navigational Radar Patch Array Antenna: Comparison to Human Exposure Limits // Proceedings of 27th International Conference on Software, Telecommunications & Computer Networks - SoftCOM 2019, Split, 2019. pp.1-4 Matković, Anđela; Šarolić, Antonio: Slot Antenna in a Coaxial Cable Shield – Coupling Loss Computational Analysis // Proceedings of European Microwave Conference in Central Europe - EuMCE 2019, Prag, 2019. pp. 1-4
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course	EU COST Action CA15104 "Inclusive Radio Communication Networks for 5G and beyond (IRACON)", Management Committee Member

carried out in the last five years (5 at most)	Šarolić, Antonio: Study on analysis of wind power plant "Opor" effects on the functionality of SSR radar at the location of radar station Kozjak, professional project, FESB Split Šarolić, Antonio: Study on electromagnetic compatibility analysis of wind power plant Bila Ploča (Pelješac) with PSR and SSR radars at the location Rota (Pelješac), professional project, FESB Split Šarolić, Antonio: Non-ionizing radiation measurements with human exposure analysis at the HRM coastal surveillance stations, professional project, FESB Split Šarolić, Antonio; Modlic, Borivoj: Electromagnetic compatibility of MORH radar system with "Odašiljači i veze" radio systems and devices at locations Rota and Učka, professional project, FER Zagreb
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Student evaluations in academic year 2019/20, University of Split: - "Wireless communications": average grade 4,7 out of 5 - "Antenna systems": average grade 4.9 out of 5 - "Electromagnetic compatibility": average grade 5 out of 5

First and last name and title of teacher	**Maja Škiljo, Ph.D.**
The course he/she teaches in the proposed study programme	HYDROACOUSTICS AND SHIP PHYSICAL FIELDS
GENERAL INFORMATION ON COURSE TEACHER	
Address	R. Boškovića 32, 21000 Split
Telephone number	0038521305675
E-mail address	msekelja@fesb.hr
Personal web page	https://nastava.fesb.unist.hr/nastava/nastavnici/detalji/msekelja
Year of birth	1982.
Scientist ID	296694
Research or art rank, and date of last rank appointment	scientific assistant, 31. 03. 2017.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	assistant professor, 01. 03. 2019.
Area and field of election into research or art rank	Technical Sciences, Electrical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	01. 06. 2007.
Name of position (professor, researcher, associate teacher, etc.)	assistant professor

Field of research	Electrical Engineering
Function	High education and research
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	19. 05. 2014.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4/5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Radiocommunications (coarse teacher, under graduate study, first year), Radar (graduate study, first year), Measurements in wireless systems (assistant, graduate study, second year), Systems of wireless energy transfer (assistant, graduate study, second year), Mobile communications (assistant, graduate study, second year).
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Skiljo, Maja; Blazevic, Zoran; Poljak, Dragan Indoor Channel Characterization for GPR ElectromagneticCompatibility// Proceedingsof 2019 International Conference on Software, Telecommunicationsand Computer Networks (SoftCOM) Split, 2019. str. 1-5 doi:10.23919/SOFTCOM.2019.8903675 (predavanje, međunarodna recenzija, cjeloviti rad (inextenso), znanstveni) Blažević, Zoran; Škiljo, Maja ResonantNear-field Power Transfer: revisitingthefrequency-splittingphenomenonusingthespherical mode theoryantenna model. // IEEE antennas&propagation magazine, 61 (2019), 08750777, 9 doi:10.1109/MAP.2019.2920102 (međunarodna recenzija, članak, znanstveni) Škiljo, Maja; Konsa, Toni; Blažević, Zoran; Poljak, Dragan Antenna Design for Low-Cost Laptop-basedGroundPenetrating Radar// SpliTech 2018 / Šolić, Petar (ur.). Split, 2018. str. 1-4 (predavanje, međunarodna recenzija, cjeloviti rad (inextenso), znanstveni) . Škiljo, Maja; Sanader, Željko; Blažević, Zoran

	Wi-Fi Signal Measurementsin Building Surroundings // RecentAdvancesin Communications andNetworking Technology, 7 (2018), 2; 1-6 doi:10.2174/2215081107666180409124917 (međunarodna recenzija, članak, znanstveni) Škiljo, Maja; Blažević, Zoran; Poljak, Dragan Ultra-wideband ParabolicBiconeAntenna for GroundPenetrating Radar// 2015 International Conference on Software, Telecommunicationsand Computer Networks / Rožić, Nikola ; Begušić, Dinko (ur.). Split, 2015. (predavanje, međunarodna recenzija, cjeloviti rad (inextenso), znanstveni)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split, The office for quality: Radiocommunications 2020: 5.0 (+-0.0) 2019: 4.9 (+-0.1) 2018: 5.0 (+- 0.2) 2017: 5.0 (+-0.1) 2016: 5.0 (+- 0.2) Radars: - 2019 5.0 (+-0.1) 2018: 4.9 (+- 0.2) 2017: 4.8 (+-0.1) 2016: 5.0 (+- 0.1)

First and last name and title of teacher	**Hrvoje Šimleša**
The course he/she teaches in the proposed study programme	Military training I , Military training II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ilica 256 b Zagreb
Telephone number	095 913 1360
E-mail address	hrvoje.simlesa@gmail.com
Personal web page	
Year of birth	1983

Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Croatia Defense Academy
Date of employment	2010
Name of position (professor, researcher, associate teacher, etc.)	Battalion Commander
Field of research	Infantry
Function	Battalion Commander
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Kinesiology
Institution	Faculty of Kinesiology Zagreb
Place	Zagreb
Date	2005
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	

The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Joško Šoda, PhD, assistant professor**
The course he/she teaches in the proposed study programme	AUTOMATION OF MARINE ENGINE SYSTEMS
GENERAL INFORMATION ON COURSE TEACHER	
Address	Liveja II 28
Telephone number	
E-mail address	jsoda@pfst.hr
Personal web page	
Year of birth	1974
Scientist ID	248935
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Asocciate professor, 2020.
Area and field of election into research or art rank	Područje tehničkih znanosti, polje elektrotehnika
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	October 2012.
Name of position (professor, researcher, associate teacher, etc.)	Asocciate professor, 2020.
Field of research	Process automation, signal processing, automation
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctoral degree
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	11. June 2010.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Engleski, 5

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	At the Faculty of Maritime Studies he was the lecturer of the following courses: a. Undergraduate study: Digital Electronics, Electronic Maritime Safety Systems, Automation of Ship Mechanical Systems II, Automation in Maritime Traffic, Ship Automatic Control. graduate study: Process measurements and instrumentation, Automatic control of vessels, Automation of ship propulsion.
Authorship of university/faculty textbooks in the field of the course	Process measurements and instrumentation (presentation), graduate study
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1.Šoda, J., Majić, M., Vujović, I., Sorić, B., An Overview on a Future Trends and Smart Technologies in Maritime, 8th International Maritime Science Conference, Budva, Crna Gora, 11-12.04.2019., p.p. 647-653. 2.Vujović, I., Šoda, J., Kuzmanić, I., Doppler spectrum type contribution to BER in fiber optic communication channel, Engineering Review, 36(2016), 1, str. 71-79. , 3. Novkinić, B., Vujović, I., Šoda, J., Marine Environment Influence on Fiber Optic Systems Operation, Transactions on Maritime Science, 4(2015), 1, str. 23-34. 4. Vujović, I., Šoda, J., Kuzmanić, I., Utjecaj tehnologije 3D tiskanja na raspoloživost brodskih sustava, Naše more, 62(2015), 4, sup., p.p. 93-96. 5. Kuzmanić, I., Vujović, I., Šoda, J., The Impact of the Noise in the Fibers to Vessel's Communications, Proceedings of 17th International Conference on Transport Sceince, Portorož, Slovenija, 21-22.05.2015., p.p. 195. – 199.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Marko Vukasović, Ph. D., Assistant Professor**
The course he/she teaches in the proposed study programme	Strength of materials
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32, 21000 Split, Hrvatska
Telephone number	+385 (0)21 305 975
E-mail address	mvukasov@fesb.hr
Personal web page	
Year of birth	1983.
Scientist ID	308524
Research or art rank, and date of last rank appointment	Scientific Associate, 18/10/2017
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 17/10/2018
Area and field of election into research or art rank	Technical Sciences, Basic Technical Sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	01/11/2018
Name of position (professor, researcher, associate teacher, etc.)	Assistant Professor
Field of research	Mechanics of deformable solids
Function	Teaching and scientific research
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	27/11/2014
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Technical mechanics 1, Mechanics of materials: Professional studies of mechanical engineering and naval architecture, Undergraduate study programme Mechanics of materials and 2: University studies of mechanical engineering, naval architecture and industrial engineering, Undergraduate study programme
Authorship of university/faculty textbooks in the field of the course	

Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	6. Pavazza, Radoslav; Matoković, Ado; Vukasović, Marko. Bending of thin-walled beams of open section with influence of shear—Part II: Application. // Thin-walled structures (0263-8231) 116 (2017); 369-386 (Sceintific article). 7. Vukasović, Marko; Pavazza, Radoslav; Vlak, Frane. An analytic solution for bending of thin-walled laminated composite beams of symmetrical open sections with influence of shear. // Journal of strain analysis for engineering design (0309-3247) **52** (2017), 3; 190-203 (Sceintific article) 8. Vukasović, Marko; Pavazza, Radoslav; Vlak, Frane. Analytic solution for torsion of thin-walled laminated composite beams of symmetrical open cross sections with influence of shear. // Archive of applied mechanics (0939-1533) **87** (2017), 8; 1371-1384 (Sceintific article) 9. Vukasović, Marko; Pavazza, Radoslav. An approximate analytic solution for the stresses and displacements of thin-walled composite beams with mono-symmetric cross-sections subjected to bending. // 20th International Conference on Composite Materials, ICCM20 Programme and book of abstracts / Thomsen, Ole T. ; Berggreen, C. ; Sorensen, Bent F. (ur.). - Copenhagen : MCI Copenhagen , 2015. 52-52. (lecture, international review, published paper, scientific). 10. Pavazza, Radoslav; Matoković, Ado; Vukasović, Marko (2020). A theory of torsion of thin-walled beams of arbitrary open sections with influence of shear, Mechanics Based Design of Structures and Machines, DOI: 10.1080/15397734.2020.1714449
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	ME4CataLOgoue (Mechanical Engineering for Catalogue) Croatian Catalogue of knowledge, skills and competences for Mechanical Engineering studies (Bachelor, Master and Doctoral study programmes) based on learning outcomes.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Science reward – University of Split 01/02/2019
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Luka Vukić, Ph.D.**
The course he/she teaches in the proposed study programme	Academic writing

GENERAL INFORMATION ON COURSE TEACHER	
Address	Papandopulova 29, Split
Telephone number	/
E-mail address	luka.vukic@pfst.hr
Personal web page	/
Year of birth	1989
Scientist ID	354292
Research or art rank, and date of last rank appointment	/
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	/
Area and field of election into research or art rank	Area of technical sciences, filed of traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Maritime Studies
Date of employment	1st April 2016
Name of position (professor, researcher, associate teacher, etc.)	Teaching/research assistant
Field of research	Logistics and Transport Technology
Function	/
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Maritime Studies, University of Rijeka
Place	Rijeka
Date	31st May 2019
INFORMATION ON ADDITIONAL TRAINING	
Year	/
Place	/
Institution	/
Field of training	/
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, excellent (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language, very good (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	/
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	/
Authorship of university/faculty textbooks in the field of the course	/
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Poletan Jugović, T., Vukić, L. (2016), Competencies of logistics operators for optimisation the external costs within freight logistics solution. *Pomorstvo*, 30(2), 120-127. 2. Kos, S., Vukić, L., Brčić, D. (2017), Comparison of external costs in multimodal container transport chain. *Promet – Traffic&Transportation*, 29(2), 243-252. 3. Vukić, L., Poletan Jugović, T., Kolanović, I. (2017), External costs as competitive factor for affirmation of the Rijeka – Pivka

	railway route in the Baltic – Adriatic Corridor, *Scientific Journal of Maritime Research/ Pomorstvo*, 31(2), pp. 102-110 4. Vukić, L., Peronja, I., Slišković, M. (2018), Port Pricing in the North Port of Split: A Comparative Analysis, *Transactions on Maritime Science*, 7 (1), pp. 59-70. doi:10.7225/toms.v07.n01.006 5. Vukić, L., Ukić Boljat, H., Slišković, M. (2018), Short Sea Shipping – an Opportunity for Development of the North Port of Split, *NAŠE MORE: znanstveno-stručni časopis za more i pomorstvo*, 65, 3 Supplement, pp. 18-25. doi:10.17818/NM/2018/3.10
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	/
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Project funded by the Ministry of Sea, Transport and Infrastructure - "Nacionalni plan razvoja luka otvorenih za javni promet od županijskog i lokalnog značaja"; EU Project - "SIROCCO- Održivi međuregionalni obalni i kruzing turizam kroz suradnju i zajedničko planiranje", programme of transnational cooperation entitled Mediteran MED; Scientific project of the Faculty of Maritime Studies in Rijeka with the support of the University of Rijeka – ECSQTransRoute ("Utjecaj i efekti eksternih troškova i kvalitete usluge na valorizaciju prometnog pravca"); Project entitled "CHARGE" - Capitalization and Harmonization of the Adriatic Region Gate of Europe, 2019; Project entitled "InteRiv – Internacionalizacija studijskih programa Morskog ribarstva i Vojnog pomorstva na Sveučilištu u Splitu".
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	Project entitled InteRiv – Internacionalizacija studijskih programa Morskog ribarstva i Vojnog pomorstva na Sveučilištu u Splitu – Workshop on pedagogical and didactic competences (30 hours)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	/

First and last name and title of teacher	**Davor Vodopija, M.Ed.**
The course he/she teaches in the proposed study programme	Naval English I Naval English II
GENERAL INFORMATION ON COURSE TEACHER	
Address	Trščanska 35, Split
Telephone number	0955637508
E-mail address	dvvodopija@yahoo.com
Personal web page	
Year of birth	1969
Scientist ID	
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	
Area and field of election into research or art rank	

INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Croatian Defence Academy “Dr. F. Tuđman”
Date of employment	15 Jan 1997.
Name of position (professor, researcher, associate teacher, etc.)	Associate teacher
Field of research	Emglish language
Function	Teacher
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master degree in English Language
Institution	University of Split, Faculty of Humanities and Social Sciences
Place	Zadar
Date	29 April 1994
INFORMATION ON ADDITIONAL TRAINING	
Year	1) 2007 2) 2004 3) 2001
Place	1) Garmisch-Partenkirchen, Germany. 2) Newport, USA 3) Wien, Austria
Institution	1) Partner Language Training Center Europe 2) Surface Warfare Officers School Command, 3) National Defence Academy Command,
Field of training	1) Language Testing Seminar 2) Maritime Operational Language Seminar 3) English Teacher Training
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French language, (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language(3)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Davor Vodopija, Tomislav Skračić, Jelena Žanić-Mikuličić**,** Marine Engineers’ Views on ESP Teachers, Book of Proceedings of IMSC 2017, 7th International Maritime Science Conference, April 20-21, 2017, Solin, Croatia, ISSN 1847-1498
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course	

carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Croatian Defence Academy Award for teaching
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split students' questionnaire - average 4,4

First and last name and title of teacher	**Lea Vojković, Ph.D.**
The course he/she teaches in the proposed study programme	Electronic Navigation Seamanship III Work Organization and Management on Board
GENERAL INFORMATION ON COURSE TEACHER	
Address	Uvala Milna 4, 21480 Vis
Telephone number	0918926129
E-mail address	lvojkovic@pfst.hr
Personal web page	
Year of birth	1978
Scientist ID	377492
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 21st November 2019
Area and field of election into research or art rank	Area of technical sciences, field of traffic and transport technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies
Date of employment	22nd November 2019
Name of position (professor, researcher, associate teacher, etc.)	Assistant Professor Area of technical sciences, field of traffic and transport technology, branch maritime and river transport, Nautical Studies Department, Marine Military Studies
Field of research	
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Rijeka, Faculty of Maritime Studies
Place	Rijeka
Date	17th January 2019
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	

Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian language 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French language 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Marijan Zujić,M.Eng.**
The course he/she teaches in the proposed study programme	Passage Planning Ship Handling Techniques
GENERAL INFORMATION ON COURSE TEACHER	
Address	Hercegovačka 46, Split
Telephone number	091 380 7015
E-mail address	mzujic@pfst.hr
Personal web page	/
Year of birth	1962

Scientist ID	/
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Lecturer, 30th March 2011
Area and field of election into research or art rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Maritime Studies in Split
Date of employment	Since 2005employed as a Lecturer
Name of position (professor, researcher, associate teacher, etc.)	teacher
Field of research	
Function	Senior Lecturer
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Master's degree in Maritime Transport
Institution	Faculty of Maritime Studies in Dubrovnik – branch in Split
Place	Split
Date	1995
INFORMATION ON ADDITIONAL TRAINING	
Year	9th July 2019
Place	Split
Institution	L.K. Split
Field of training	Master Mariner
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian language
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language, very good (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Undergraduate study programme and graduate study programme, has been teaching the following courses: 1. Ship Navigation and Manoeuvring I 2. Ship Navigation and Manoeuvring II 3. Ship Navigation and Manoeuvring III 4. Cargo in Maritime Transport 5. Cargo Handling I 6. Cargo Handling II 7. Technology od Special Cargo Transportation 8. Multimodal Transport Systems 9. Passage Planning 10. Onboard Internship 11. Onboard Training 12. Seamanship 13. Techniques of Operating a Vessel 14. Skills Needed for Working on a Vessel 15. Knowledge of Ship and Cargo
Authorship of university/faculty textbooks in the field of the course	"Sigurnost na moru" Full Prof. Z.Bićanić, PhD and M.Zujić

Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Dr.sc. Mirko Bilić, Dr.sc. Zlatimir Bićanić, Kap. Marijan Zujić: MODELIRANJE LUČKOG PREKRCAJNOG PROCESA I VREDNOVANJE PONAŠANJA MODELA NA PRIMJERU LUKE ŠIBENIK, "MOBILITY AND ROAD SAFETY" IV conference with international participation, Travnik-Vlašić Bosnia and Herzegovina 2013. 2. Capt. Marijan Zujić, Master of Engineering, Asst. Prof. Ivan Komar, PhD, Tatjana Stanivuk, PhD: "MANEVRIRANJE POMOĆU TEGLJAČA" V conference with international participation, Travnik-Vlašić Bosnia and Herzegovina 2014. 3. Capt. Marijan Zujić, Master of Engineering, Zlatimir Bićanić, PhD, Master of Engineering Slaven Sučević, Master of Engineering: „SUVREMENI PROPULZIJSKI SUSTAVI NA BRODOVIMA" XIII international conference innovative technologies within the function of solving of the traffic and environmental problems in transition countries, Travnik-Vlašić Bosnia and Herzegovina 2016. 4. Mandić, N., Pjaca, M., Zujić, M., (2019): Inspection in coastal liner shipping, 8. Međunarodna konferencija pomorskoj znanosti (IMSC – 2019)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

First and last name and title of teacher	**Dražen Živković, Ph. D**
The course he/she teaches in the proposed study programme	Material technology
GENERAL INFORMATION ON COURSE TEACHER	
Address	Rovinjska 4, 21000 SPLIT, CROATIA
Telephone number	+385 91 4305910
E-mail address	Drazen.Zivkovic@fesb.hr
Personal web page	/
Year of birth	1957
Scientist ID	044701
Research or art rank, and date of last rank appointment	Ph. D.; 04.09.1999.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor; 20.02.2014.
Area and field of election into research or art rank	Technical sciences, scientific field of Mechanical engineering,
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Universitiy of Split, Faculty Electrical Engineering, Machanical Engineeering and Naval Architecture

Date of employment	01.10.1981.
Name of position (professor, researcher, associate teacher, etc.)	Full professor
Field of research	Teaching courses in materials, technology and tribology
Function	Head of the Department of Materials and Tribology
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D
Institution	Universitiy of Split, Faculty Electrical Engineering, Machanical Engineeering and Naval Architecture
Place	Split
Date	04.09.1999.
INFORMATION ON ADDITIONAL TRAINING	
Year	1990
Place	Zagreb
Institution	University of Zagreb, Faculty of Mechanical Engineering and Naval architecture
Field of training	Mechanical engineering
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	**Undergraduate study of mechanical engineering and shipbuilding:** Materials 1, Materials 2, Technology 1 **Graduate study of mechanical engineering:** Material selection, Tribology, Heat treatment and surface protection, Fuels and lubricants **Poslijediplomski studij – doktorski studij** Tribological principles
Authorship of university/faculty textbooks in the field of the course	script "Materials", script "Metal casting", authorized lectures on the Web from: Materials, Heat treatment and surface protection, Selection of materials, Tribology
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Dadić, Zvonimir; Živković, Dražen; Čatipović, Nikša,Tribological wear mechanisms of molds for high presure die casting, Metalurgija, 55 (2016), 2; 2016. 2. Živković, Dražen; Mišina, Nedjeljko; Ljumović, Petar „Corrosion damage of seam welded galvanized hot water pipelines“, Tehnički vjesnik, 24, 4, 2017. 3. Čatipović, Nikša; Živković, Dražen; Dadić, Zvonimir, „Influence of austempering temperature and salt bath agitation on microstructure and mechanical properties of austempered ductile iron“, Tehnički vjesnik, 25, 2, 2018. 4. Čatipović, Nikša; Živković, Dražen; Dadić, Zvonimir; Krolo, Jure, „Influence of austempering temperature and salt bath agitation on microstructure and mechanical properties of austempered ductile iron”, Kovové materiály, 56, 3, 2018. 5. Dadić, Zvonimir; Živković, Dražen; Čatipović, Nikša; Marinić-Kragić, Ivo, „Influence of steel preheat temperature and molten

	casting alloy AlSi9Cu3(Fe) impact speed on wear of X38CrMoV5-1 steel in high pressure die casting conditions", Wear, 424-425C, 2019.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. *Modificiranje površine izotermički poboljšanog nodularnog lijeva*, (120-1201833-1788), Voditelj projekta: Prof.dr.sc. Vinko Ivušić, Vremensko razdoblje: 2007- 2011, Institucija: Ministarstvo znanosti, obrazovanja i športa - RH 2. *Optimiranje i modeliranje termalnih procesa materijala*, Vremensko razdoblje: 2014. - 2018., Voditelj projekta: prof.dr.sc. Božo Smoljan, Institucija: Ministarstvo znanosti, obrazovanja i športa – RH *3. Upravljanje procesima trenja i trošenja primijenom tribološkihmaterijala,* (0120027), Voditelj projekta: Prof. dr. sc. Vinko Ivušić, Vremensko razdoblje: 2002. - 2006., Institucija: Ministarstvo znanosti, obrazovanja i športa - RH *4. Razvoj polukontinuirano lijevanih proizvoda od gnječenih aluminijskih legura,* Voditelj projekta: Prof.dr.sc. Ante Markotić, Vremensko razdoblje: 2002. – 2005.,Institucija: HITRA - RH 5. *Visoko kvalitetne Al-konstrukcije pod pogonskim opterećejem*, (023041), Voditelj projekta: Prof. dr. sc. Vatroslav Grubišić, Vremensko razdoblje: 1996. - 2000., Institucija: Ministarstvo znanosti, obrazovanja i športa - RH
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

5.4. Estimated costs of study per student.

Estimated costs of study per student per one year amount 12.000 €.

5.5. Optimal number of students

Optimal number of students is 30.

5.6. Methods of monitoring the quality and success of the study programme delivery

Pursuant to European standards and guidelines for internal quality assurance in the higher education area (pursuant to The Standards and Guidelines for Quality Assurance in the European Higher Education Area), on the grounds of which the University of Split determines quality assurance management, the study programme proponent shall draw a plan of the procedure of assuring quality and study programme	
Documents on which the system of quality assurance of a component is based:	
• **The ordinance on the quality assurance system of a component (enclose if available)** http://www.pfst.hr/images/iso_management/Pravilnik_o_sustavu_osiguravanja_kvalitete_na_PFST_93FV.pdf	
• **The manual on the quality assurance system of a component (enclose if available)** • http://www.pfst.hr/images/dokumenti/kvaliteta/PRIRUCNIK.pdf	
Description of the procedures used for evaluating quality assurance of the study programme: • **It is necessary to describe a method (most often it is a questionnaire for students or teachers, self-evaluation questionnaire), list the performer (a component, a university office), way of analysing results and informing, and timeline of the execution.** • **In case it has been described in an enclosed document, list the name of the document and the article.**	
Evaluation of teachers' and teacher associates' work	Student questionnaire for evaluation of teachers' work. The survey is carried out once a term. Performer: Centre, Committee for Quality Improvement of the Faculty (hereinafter referred to as the Committee) Results are presented at the Faculty Council and published on the Faculty web-page. Teachers' self-evaluation form (Article 4.2 of the Manual) Performer: The Committee The procedure is carried out every 2-4 years Results are presented at the Faculty Council and published on the Faculty web-page.
Monitoring of evaluation and harmonisation with expected learning outcomes	
Evaluation of availability of resources (spatial, human, information) for the process of learning and teaching	A form for evaluating expert-administrative services, library and material conditions of studying (Article 5.1 of the Manual) Performer: Centre, The Committee The procedure is carried out periodically Results are presented at the Faculty Council and published on the Faculty web-page.
Availability and evaluation of a support for students (mentoring, tutoring, counselling)	Article 5.2 of the Manual Performer: the Committee, Commission for students' issues It is carried out continuously Continuously
Monitoring of students' passing rate by subjects and at the study as a whole	The procedure is carried out pursuant to Article 3.2 of the Manual Performer: Heads of the study, Student Service Results are available to all heads of the study and teachers, and to the Committee

	Once a year
Students' satisfaction with the programme in its entirety	Surveying of graduates, Article 2.3 of the Manual Performer. Centre, the Committee The procedure is carried out every 2-4 years The survey is carried out annually. Results are presented at the Faculty Council and published on the Faculty web-page.
Procedures for obtaining feedbacks from external components (alumni, employers, job market and other relevant organisations)	Surveying of employers, Article 2.4 of the Manual Performer: the Committee The survey is carried out every 3-5 years Results are published on the Faculty web-page
Evaluation of students' practice, if available (short description of the procedures of performing and evaluating and assuring quality	
Other evaluation procedures carried out by the proponent	
Description of procedures of informing external components on the study programme (students, employers, alumni)	Ensuring support mechanism for students (Article 5.2 of the Manual) Performer: the Committee, Commission for students' issues • publishing of the Guide for study enrolment • participation in the University Fair • updating of the Faculty internet pages • inciting teachers to update pages of their courses which are a part of the official Faculty web pages • informing about all student mobility programmes The procedure is carried out continuously.