## 3.2. Course description

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| Generic information |
| Head of Course | Predrag Kralj, Associate Professor, Ph.D., MS.ME., BS.ME. |
| Course | Marine Engineering Systems |
| Study Programme  | Nautical Studies and Marine Transport Technology |
| Type of Course | STCW - obligatory |
| Year of Study | 1 |  |
| Estimated Student Workload and Methods of Instruction | ECTS coefficient of Student Workload | 4 |
| Number of Hours (L+E+S) | 30+15+0 (2+1+0) |

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| 1. **GENERAL COURSE DESCRIPTION**
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| * 1. *Course Objectives*
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| The objective of the course is to give the students basic knowledge on ship power plant, main engines but also auxiliary systems and other systems that are important for the safety of sea transport in accordance with contents that STCW convention defines for authorized deck officers. |
| * 1. *Prerequisites for Course Registration*
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| Knowledge gained through Technical mechanics course. |
| * 1. *Expected Learning Outcomes*
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| It is expected that the student will be able:1. to recognize the type of propulsion systems and their main characteristics and to manage the ship accordingly
2. to explain the function and characteristics of auxiliary marine equipment or system
3. to apply knowledge to manage propulsion engine and other auxiliary systems as responsible deck officer on operating and managing level
4. to analyze, as a deck officer on duty, the indicated values of the power plant altogether
5. to evaluate the importance of detected irregularities in power plant operation and to be able to make corrections
6. to analyze classification societies schemes of safety systems and to plan periodical checks and crew exercises
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| * 1. *Course Outline*
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| Operating basics of ship power plants (diesel-engine, steam-turbine, gas-turbine and combined propulsion plants, ship’s screw and driving shaft, power plant’s remote operation from bridge). Marine auxiliary equipment (steam generators, fresh water generators, pumps and systems, steering gears, ventilation and air conditioning and corresponding refrigerating systems and elements, sewage treatment plants, stabilizers, bilge systems and equipment, incinerators, deck equipment, hydraulic systems). General knowledge on ship technical systems (basic engineering terms and fuel consumption, prerequisites for duty schedule to achieve respective power plant safety in normal circumstances and in case of unattended machinery space). |
| * 1. *Modes of Instruction*
 | [x]  Lectures[ ]  Seminars and workshops [x] Exercises [ ]  E-learning[ ]  Field work | [ ]  Practical work [ ]  Multimedia and Network [ ]  Laboratory[ ]  Mentorship[ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| * 1. *Comments*
 | The exercises are performed od engine room simulator exclusively, they start with cold ship situation and finishes with operation of main engine and every important auxiliary system during voyage on open sea. |
| * 1. *Student Obligations*
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| Active participation on classes and at least 70% of presence on lessons.Passed partial exams and successful demonstration of power plant managing skills on the engine room simulator through group type practical exams, preparing the students for their future working environment.Passed final exam. |
| * 1. *Assessment[[1]](#footnote-1) of Learning Outcomes*
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| Course attendance | 1,5 | Class participation |     | Seminar paper |     | Experiment |     |
| Written exam |     | Oral exam |     | Essay |     | Research |     |
| Project |     | Continuous Assessment | 1 | Presentation |     | Practical work | 0,5 |
| Portfolio |     | Final exam | 1 |  |     |  |     |
| * 1. *Assessment of Learning Outcomes and Examples of Evaluation during Classes and on the Final Exam*
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| 70% during classes and 30% on final exam (learning outcomes 1 – 6) in accordance with the University’s and Faculty’s normative acts. Continuous assessment:* Two theoretical partial exams on marine engineering (diesel-engine power plants, steam generators and turbines, auxiliary equipment, piping) (46%) – outcomes 1 – 6
* Two partial exams on engine room simulator where skill of marine engines and equipment operations is assessed (14%) – outcomes 1, 3, 4, 5, 6

Two numerical home works 10% - outcomes 1, 4, 5On written final exam complete field of marine engineering is assessed.Examples of assessment for outcome:1. On the engine’s scheme recognize main construction elements (outcomes 1, 3, 4)
2. On the engine room simulator operate propulsion engine in accordance with its characteristics (outcomes 2 – 5)
3. Demonstrate the importance of measured physical values for propulsion engine normal operation evaluation (outcomes 4, 5)
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| * 1. *Main Reading*
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| 1. Kralj Predrag, Marine energy systems, web publication
2. Dragan Martinović: Strojarski priručnik za časnike palube, Graftrade, Rijeka, 2005.
3. Matković Milan, Protupožarna zaštita na brodovima, Pomorski fakultet, Rijeka, 1995.
4. Learning materials published on the lecturer’s web page and on the e-learning system Merlin
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| * 1. *Recommended Reading*
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| 1. Ozretić Velimir, Brodski pomoćni strojevi i uređaji, Ship management, Split, 1996..2. Martinović Dragan, Brodski rashladni uređaji, Školska knjiga, Zagreb, 1994.3. Knak Christen, Diesel Motor Ships – Engines and Machinery, G-E-C GAD Publishers, Copenhagen, 1979. |
| * 1. *Number of Main Reading Examples*
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| *Title*  | *Number of examples* | *Number of students* |
| Brodski energetski sustavi (Marine Energy Systems) | web | 150 |
| Lecturer’s Learning materials | web |
| Strojarski priručnik za časnike palube | Bibliothek6 |
| Protupožarna zaštita na brodovima | Bibliothek6Faculty Book Store500 |
| * 1. *Quality Assurance*
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| Course quality review carried in accordance with ISO 9001 system and European standards and guidance for quality assurance carried through on Maritime faculty. Student Success is evaluated, and corrective measure implemented yearly. |

1. **NOTE**: 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. Use empty fields for additional activities. [↑](#footnote-ref-1)