

Faculty of Maritime Studies / Pomorska elektrotehnika (2017) /

Prerequisites	No
Aims	Upon successful completion of this subject the student will be able to demonstrate: 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.
Lecturer / Teaching assistant	Prof. dr. Lazo Vujović ch.-eng Mr. Miroslav Vukičević ch-eng
Method	Lecture, work on engine room simulators, homework, seminar work.
Week 1, lectures	
Week 1, exercises	Preparation and semester enrolment Familiarisation with marine engine simulator, its purpose and objectives.
Week 2, lectures	
Week 2, exercises	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).
Week 3, lectures	
Week 3, exercises	Measurement gauges (pressure, temperature, level, volume- mass, flow, engine speed, power, voltage and electric power, CO2 and NOx contents, indicator diagram).
Week 4, lectures	
Week 4, exercises	Description of the simulated alarms. Calculation of the shaft torque, mean indicated pressure, cylinder power, mechanical efficiency of the engine, specific fuel consumption.
Week 5, lectures	Preparation for The First Compulsory Assignment
Week 5, exercises	The First Compulsory Assignment Start D/G and Emer.generator EMS and MSB
Week 6, lectures	
Week 6, exercises	Using thermal data to establish heat balance.
Week 7, lectures	
Week 7, exercises	Control. Performing local and remote control systems (control from the engine room, E/R control room and the navigating Bridge).
Week 8, lectures	
Week 8, exercises	Hand-over of the control point.
Week 9, lectures	
Week 9, exercises	Operation procedures. Preparation and starting Aux. Boiler (manual and automatic mode)
Week 10, lectures	The Second Compulsory Assignment...starting Aux. Boiler (manual and automatic mode)
Week 10, exercises	The Second Compulsory Assignment
Week 11, lectures	
Week 11, exercises	Safety measures taken when starting and controlling: valves, pumps, water system, steam plant system, burners, fuel tanks make-up, Centrifugal pumps, bilge tanks.
Week 12, lectures	
Week 12, exercises	Using checklist when preparing, starting and controlling individual engines and systems. Conditions of connecting electric generators and their parallel operation (speed, voltage, frequency and synchronisation). Description of the operation of a simulated plant, checklist of procedures for: closing and opening the valves within the system, flow of sea water, starting the steam generating plant, fuel separator operation.
Week 13, lectures	
Week 13, exercises	Unplanned maintenance. Detection of malfunction / failure and procedure of removing the failure. Duties of the 1st marine engineer – to advice and promptly notify the navigating bridge about potential problems in the propulsion unit.
Week 14, lectures	
Week 14, exercises	Planned maintenance.. Preparing for the final exam. Start ME locally and change over to ECR:

Week 15, lectures	Final exam. Start ME
Week 15, exercises	
Student obligations	Students are obliged to attend lectures, submit homework assignments and take the final exam
Consultations	Every day after practical exercises.
Workload	5 credits x 40/30 = 6 hours + 40 minutes
Literature	
Examination methods	1. Practical exercise I, from 0 to 30 points; 2. Practical exercise I, from 0 to 30 points; 3. Final exam, from 0 to 30 points; 4. Homework 10 points Passing mark is awarded if the student collects more than 50 points.
Special remarks	
Comment	
Learning outcomes	