

MSc - Master of Science –Naval electromechanical systems (100 ECTS)

Name of Study

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Introduction

The mission of the “Naval electromechanical systems” MSc Program developed by the Merchant Marine Faculty of “Mircea cel Batran” Naval Academy is to continue the Romanian Naval traditions, by developing general, specific and aptitude competences, in order to facilitate our graduates to properly develop their own professional careers:

- in worldwide merchant fleets, capable to fulfill the needs on a managerial level (second officer, master) onboard merchant vessels;
- for the Navy forces, capable to partially fulfill the requirements of the Executive or Commanding Officer onboard navy vessels.

This mission will be accomplished by applying all procedures and activities requested by the Academy's Quality Management System and also fully compatible to the academic community aquis.

The values we want to implement for our success are:

- the professionalism, sustainable activity respect, honesty and correctitude in front of other people and his profession;
- the respect to other people, respect of the law, respect of the school's traditions and virtues;

At the end the student will be able to fill the following positions:

Navy

Petty officer / Head of department / Commander
Assistant Professor
Superior Instructor / Chief Instructor

Merchant marine

Maritime or river vessels engineer–managerial level
Engineer for installations and marine equipment
Teacher for technical disciplines
Assistant Professor
Technical expert, inspector
Technical adviser in naval engineering

Full-time

Duration

3 semesters full time

Credits

90+10 ECTS

Level

Higher education

Degree

Master of Science- Naval electromechanical systems

Learning outcome

- to carry fundamental and applied research on naval electromechanical systems;
- To transfer background knowledge on electromechanical components and mastering advanced techniques in naval electromechanical maintenance;
- To transfer detailed knowledge of manufacturing technologies and machinery

installations on naval vessels;

- To transfer advanced knowledge regarding mechanical and electrical engineering;
- To transfer advanced knowledge regarding the principles and fundamentals of naval architecture; to analyze the elements that affect vessels trim and stability, no matter if the ship is intact or damaged, and identifying the best needed action in order to maintain proper values;
- Developing skills for electrical engineering and electronics at managerial level;
- Developing advanced skills in usage of software products like **Autoship** and **Autostructure**.
- Qualified for PhD study.

Prerequisites

BSc in engineering in mechanical or marine technology, or a documented, equivalent education.

Structure and organization

The first year is made up of 9 mandatory subjects. Each subject is scheduled for a given day of the week. This scheduling makes part time study possible.

The second year includes more specialized studies, including projects and a master thesis. Also, in the third semester the learning outcome is divided into two specialties: navy and merchant marine.

Aims and Goals

During the study semesters, we try to develop an advanced engineering point of view, in direct relation with the specific maritime economic issues and with all these ideas, to develop a high professional ethics and management competences specific to the maritime business. After graduating the MSc program, the students will be able to:

- Practice efficient logistics operation and maintenance activities;
- Communicate and negotiate;
- Adapt quickly and effectively as technical manager in a variety of institutions (shipping companies, merchant ships and military universities, logistic bases, etc.).
- Work effectively with specialists in other fields;
- Achieve process and analyze experimental data;
- Properly action and work in complex and multicultural teams;
- Efficiently communicate in English, either face to face or using modern technique;
- Study / simulate naval hydrodynamics and hull structure calculus;
- Properly use computers;
- Thorough outgoing of the maritime and commerce concepts and its usage in order to ensure a better management and administration of the vessel.

Specific for Navy

- Acknowledge and understand processes and phenomena in specific installations warships;
- Operate, maintain and repair specific electromechanical components naval installations;
- Organize and lead work in the engine room;
- Determine by calculation and adjust, functional parameters, using documentation and board means;
- Carry out repairs to naval facilities and supervision and organization of their process flow according to lists of repair;

Specific for Merchant marine

- acknowledge of advanced concepts of trim, stability and dynamics of the ship;
- acknowledge and understand processes and phenomena specific energy systems and naval installations;
- Detail knowledge of manufacturing technologies and machinery naval installations
- Operate, maintain and repair in terms of efficiency and safety components naval installations;
- Organize and lead work in the engine room;
- Determine by calculation and adjust, functional parameters, using documentation and specific board means;
- Carry out repairs to naval facilities and organize their technological process according to lists of repair;
- Drive and operate the ship and care for persons on board.

Teaching and working methods

Lectures, individual and group exercises, project work and laboratory assignments.

Internationalization

All subjects are taught in Romanian.

Code	Course title	Credits	O/V (*)	Credits per semester		
				S1(A)	S2(S)	S3(A)
SEN-01	Distribution systems and data acquisition	3	O	3		
SEN-02	Quality and reliability of materials and marine equipment	5	O	5		
SEN-03	Naval propulsion systems optimizing	7	O	7		
SEN-04	Integrated management of electromechanical processes	7	O	7		
SEN-05	Integrated design of naval facilities	8	O	8		
SEN-06	Modeling and simulation of electromechanical naval	6	O		6	
SEN-07	Propulsion systems dynamics	10	O		10	
SEN-08	Management of maintenance and repair of naval systems machinery	7	O		7	
SEN-09	Naval auxiliary systems optimizing	7	O		7	
Navy						
SEN-10	Organization and computerization of maintenance activities in Navy	6	O			6
SEN-11	Specific systems onboard warships	7	O			7
SEN-12	EMC on board	7	O			7
SEN-13	Combined propulsion systems	7	O			7
SEN-14	Management of maintenance and repair of marine power systems	3	O			3
SEN-20	Master thesis	10	O			10
	Total:			30	30	30+10
Merchant marine						
SEN-15	Ship management and administration	6	O			6
SEN-16	Management stability, trim and structural loading of the ship	7	O			7
SEN-17	Complements of dynamic ship	7	O			7

SEN-18	Risk management in shipping industry	6	O			6
SEN-19	Maritime disputes	4	O			4
SEN-20	Master thesis	10	O			10
	Total:			30	30	30+10

*) O - Mandatory course, V - Optional course