	"MIRCEA CEL BĂTRÂN" NAVAL ACADEMY
	FACULTY OF MARINE ENGINEERING
	DEPARTMENT: TACTICS AND NAVAL ARMAMENT
	STUDY AREA: MARINE ENGINEERING AND NAVIGATION
	STUDY PROGRAMME: NAVIGATION, HIDROGRAPHY AND NAVAL EQUIPMENT
	BACHELOR OF ENGINEERING – ENGINEERING DIPLOMA
	SERIES 2022 - 2026
	ACADEMIC YEAR 2025 - 2026

COURSE SYLLABUS

1. Topics

1.1 Discipline name				ELABORATION OF THE DIPLOMA PROJECT (NHEN-416)			
1.2 Course responsible				Specialization coordinator Associate Professor PhD. eng. Ovidiu Cristea			
1.3 Seminary responsible				-			
1.4 Laboratory responsible				-			
1.5 Project responsible				Scientific coordinator			
1.6 Year of study	IV	1.7 Semester	8	1.8 Assessment strategy	Cv	1.9 Course type	Ob. DS

2. Total averaged time (didactic activities per semester)

2.1 Weekly hours	4	Of which: 2.2 course	-	2.3 seminary / laboratory / project	4
2.4 Total curricula hours	56	Of which: 2.5 course	-	2.6 seminary / laboratory / project	56
Time distribution					Hours
2.7 Assisted activities					60
Research					-
Practice					-
Thesis development					-
2.8 Independent workload					44
Literature review on references					10
Individual study					12
Essays					-
Homework					12
Other activities					10
2.9 Total workload / semester (hours)					100
2.10 ECTS					4

3. Prerequisites (where applicable)

3.1 curriculum	N/A
3.2 competencies	N/A

4. Logistics (where applicable)

4.1 course facilities	-
4.2 seminar/training development	Onboard warships that have similar specificity to the project theme; study room, university library

5. Course goals and competencies

5.1 Professional competencies	<p>C1. Use of physico-mathematics, computer-specific and technical communication language.</p> <p>C2. Application of basic technical concepts to issues and projects associated with the field of study.</p> <p>C3. The operational level of navigation, hydrographic operations and maneuvering of the vessel.</p> <p>C4. Organization, management and operation of marine arms and communication systems.</p> <p>C5. Marching, ship management, safe navigation watch, maintenance of the ship's good seaworthiness.</p> <p>C6. Communication with specialists in other fields related to the specific activity of the program of study and the marine engineering and navigation field.</p>
5.2 Cross-field competencies	<p>CT1. Demonstrate and implement a rigorous, effective and responsible attitude toward the work done by showing a genuine ethical commitment to solving problems and taking decisions.</p> <p>CT2. Effective use of interhuman networking techniques in a multicultural (possibly interethnic) group, in various hierarchical, oral and written communication and effective collaboration with specialists from multiple fields.</p> <p>CT3. Objective self-assessment of the need for continuing vocational training and the efficient use of language skills, knowledge of information technology and communication for personal and professional development, with a view to integration into the labor market and adaptation to the dynamics of its requirements.</p>

6. Objectives of the discipline – expected learning outcomes to which the completion and promotion of the discipline contribute

Knowledge	<p>C1. The student/graduate identifies and describes basic concepts, principles, and methods in mathematics, physics, chemistry, technical drawing, economics, and computer science.</p> <p>C2. The student/graduate explains and interprets theoretical and experimental results from mathematics, physics, chemistry, economics, technical drawing, and computer science.</p> <p>C4. The student/graduate explains, analyzes and interprets phenomena, processes and parameters specific to marine engineering and navigation.</p> <p>C8. The student/graduate identifies and describes the fundamental concepts, principles and doctrines of naval tactics, as well as the architecture and technical-tactical characteristics of naval combat systems in all environments.</p> <p>C9. The student/graduate explains and interprets the doctrines, standards (STANAGs) and procedures specific to combined naval operations within NATO, as well as the operational planning process at the tactical level.</p>
Skills	<p>A.1.3. The student/graduate performs engineering and economic calculations of medium complexity and associates them with graphic representations of letters or specific to computer-aided design.</p> <p>A.2.1. The student/graduate applies evaluation criteria and methods for identifying, modeling, experimenting, analysis and qualitative and quantitative assessment of phenomena and processes specific to the fundamental field, including using digital technologies.</p> <p>A.2.2. The student/graduate acquires and processes data, interprets theoretical and experimental results.</p> <p>A.2.3. The student/graduate designs solutions, complying with relevant standards, for engineering problems of medium complexity that meet the specified needs, complying with public health, safety, welfare, environmental, sustainability and economic factors, as well as other specific constraints.</p> <p>A.4.1. The student/graduate selects and applies basic principles, concepts and methods to explain processes and projects in the field of marine engineering and navigation.</p> <p>A.8.1. The student/graduate operates with the concepts and principles of naval tactics for the analysis of the operational environment.</p>

	A.9.3. The student/graduate applies military decision-making to develop and select courses of action in multi-threat naval scenarios, considering the capabilities of the allied forces.
Responsibility and autonomy	<p>RA.1.3. The student/graduate communicates effectively about engineering activities with a wide range of audiences.</p> <p>RA.3.1. The student/graduate selects and analyzes bibliographic sources specific to the field.</p> <p>RA.3.2. The student/graduate demonstrates autonomy in learning on issues specific to the field.</p> <p>RA.8.1. The student/graduate demonstrates responsibility in the handling and operation of combat systems, strictly observing the rules of employment (ROE) and safety norms.</p> <p>RA.9.3. The student/graduate applies the principles of military ethics and the law of armed conflict in the planning and execution of combat actions, ensuring that legal and moral decisions are made under pressure.</p>

7. Course content

7.1 Course topics	Teaching methods	Obs.
1. The current state of topic: technical and weapon systems onboard Romanian and foreign naval ships	Explanations, brainstorming, experiments and numerical applications	
2. Tactical procedures for combat-use of weapon systems of warships, similar to those in the project theme		
3. Technical variants of the project theme, Choosing the optimal calculation option		
4. Elaboration of a scientific paper on the current state of the theme's issue	Explanations, brainstorming, experiments and numerical applications	
5. Calculation of the necessary parameters to finalize the project theme		
6. Elaboration of a scientific paper on the first conclusions of the preparation of the diploma project		
7. Validation of calculations and simulations performed with the processes used in practice		

References

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8. Cross-references in program goals and learning outcomes with the systemic stakeholders, from professional and business environment with impact against the graduate's insertion and recognition

Upon completion of this subject, the following will be acquired:
 - the ability to adapt quickly and efficiently as an engineer to new situations, in a variety of



- types of organizations and institutions;
- understanding and active participation in optimizing the processes in organizations and institutions;
 - the ability to learn and work independently;
 - the ability to design projects and carry them out at the required quality parameters.

9. Assessment strategy

Activity type	9.1 Assessment criteria	9.2 Assessment methods	9.3 Averaging
9.4 Course			
9.5 Project	the overall content of the project; - presentation of a paper, as part of the special theme of the project, at the students' scientific communication session; - presentation, within the scientific seminar, of the current state of the project theme issue	- the content and the correctness of the drafting, as well as the two presentations from the scientific sessions will be evaluated by the project supervisor	100%

9.6 Minimum performance standard

- compliance with the specifications regarding the content, the format of the project and the way of presenting the project;
- minimum grade of acceptance of the project for submission to the examination board: 6 (six).

Date of issue 05.04.2018	Course responsible Lecturer PhD eng. Ovidiu Cristea 	Seminary responsible
Date of department approval 08.05.2018	Head of the department Lecturer  Ovidiu Cristea, PhD	
Dean of the Faculty of Marine Engineering Assoc. prof. 