

**MINISTRY OF TRANSPORT
VIETNAM MARITIME UNIVERSITY**



COURSE SYLLABUS

(Credit system, applied for 62th batch onwards)

MODE OF STUDY: FULL TIME

SPECIALIZATION: MARINE ENGINEERING

(Selected Educational Program)

MAJOR: MARINE SCIENCE AND TECHNOLOGY

CODE OF MAJOR: 7840106

HAI PHONG, 9/2021

COURSE SYLLABUS

(Credit system, applied for 62th batch onwards)

Course ID: **78440106**

Course: **Marine Science and technology**

Major: **Marine Engineering**

Mode of study: **Full time**

Course duration: **4 years**

1. Training objectives

The major of Marine Engineering specializes in the operation, management, organization and implementation of maintenance and repair of ship machinery, equipment and related systems.

The objective of the course is to provide students with knowledge, skills training and attitude orientation to enable students to perform procedures and operate equipment and systems involved.

At the same time, the course will provide students with the ability to work in some similar jobs (e.g. technical management, production line operator, machinery maintenance...) and background knowledge for postgraduate studies in engineering major.

2. Learning outcomes (LO)

The learning outcomes of the syllabus are set out to meet the training objectives and satisfy the outcome standards of Level 6 of the Vietnam Qualifications Framework (VQF) in accordance with the Decision No. 1982/QĐ-TTg dated on 18th October 2016 by the Prime Minister including Knowledge (K), Skills (S), personal autonomy and responsibility in the application of knowledge and skills in the conduct of professional tasks (C). Besides, the LO also meet other accreditation standards (such as ABET 3a - 3k).

The LO standards include Underlying Knowledge, Core Engineering Fundamental Knowledge and Advanced Engineering Fundamental Knowledge; they also include skills, attitudes and ability of implementing and operating systems in the enterprise and societal context, with corresponding Level of Capacity (LoC)

Code	Description	(A) VQF	LoC
		(B) ABET	
1	TECHNICAL KNOWLEDGE AND REASONING		
1.1	Knowledge of underlying mathematics and sciences	K1, 3a	
1.1.1	Advanced Mathematics <i>Toán cao cấp</i>		3.0
1.1.2	General Physics 1 <i>Vật lý 1</i>		3.0
1.2	Knowledge of underlying Social Science & Humanities, Political Science and Law	K2, 3a,3j	

Code	Description	(A) VQF	LoC
		(B) ABET	
1.2.1	Basic principles of Marxism-Leninism 1 <i>Những NLCB của CN Mác - Lê-nin 1</i>		3.0
1.2.2	Basic principles of Marxism-Leninism 2 <i>Những NLCB của CN Mác - Lê-nin 2</i>		3.0
1.2.3	Ho Chi Minh's Ideology <i>Tư tưởng Hồ Chí Minh</i>		3.5
1.2.4	Revolutionary strategies of Vietnam Communist Party <i>Đường lối CM của ĐCS.VN</i>		3.5
1.2.5	General Law <i>Pháp luật đại cương</i>		2.5
1.3	Core engineering fundamental knowledge	K1, K4 K5,3a	
1.3.1	Introduction to Engineering <i>Nhập môn về kỹ thuật</i>		2.0
1.3.2	Geometry - Basic Engineering Drawing <i>Hình họa - Vẽ Kỹ thuật</i>		3.0
1.3.3	Material Science and Engineering <i>Vật liệu kỹ thuật</i>		2.5
1.3.4	Engineering Mechanics <i>Cơ lý thuyết</i>		3.0
1.3.5	Strength of Materials <i>Sức bền vật liệu</i>		3.0
1.3.6	Mechanic Practice <i>Thực tập cơ khí</i>		3.0
1.3.7	Thermodynamics <i>Nhiệt kỹ thuật</i>		3.0
1.3.8	Manufacturing processes <i>Kỹ thuật gia công cơ khí</i>		3.0
1.3.9	Professional English for Marine Engineering <i>Tiếng Anh chuyên ngành MKT</i>	S6	3.0
1.3.10	Automatic control theory <i>Lý thuyết điều khiển tự động</i>		3.0
1.3.11	Marine electrical equipment		3.0

Code	Description	(A) VQF	LoC
		(B) ABET	
	<i>Thiết bị điện</i>		
1.3.12	Measuring Instruments and Techniques <i>Thiết bị và kỹ thuật đo</i>		3.0
1.3.13	Applicable Informatics <i>Tin học chuyên ngành MKT</i>		3.0
1.3.14	Marine Refrigerator and Heat Exchanger <i>Máy lạnh và thiết bị trao đổi nhiệt tàu thủy</i>		2.5
1.3.15	Marine electrical systems 1 <i>Điện tàu thủy 1</i>		2.0
1.3.16	Maritime Law and Safe Working on Ships <i>Luật hàng hải và An toàn lao động trên tàu</i>		2.5
1.3.17	Marine electrical systems 2 <i>Điện tàu thủy 2</i>		3.5
1.3.18	Arrangement of Marine Propulsion Plant <i>Trang trí hệ động lực tàu thủy</i>		3,0
1.3.19	Engineering Chemistry <i>Hóa Kỹ thuật</i>		3,0
1.3.20	General Maritime <i>Đại cương hàng hải</i>		2.5
1.3.21	Microsoft office <i>Tin học văn phòng</i>		3,0
1.4	Advanced engineering fundamental knowledge	K4,K5,3k	
1.4.1	Marine Boiler – Steam Turbine <i>Nồi hơi – Tua bin hơi tàu thủy</i>		3.0
1.4.2	Marine Auxiliary Machinery 1 <i>Máy phụ tàu thủy 1</i>		3.0
1.4.3	Marine diesel engine 1 <i>Động cơ Diesel tàu thủy 1</i>		3.0
1.4.4	Marine Auxiliary Machinery 2 <i>Máy phụ tàu thủy 2</i>		3.5
1.4.5	Marine diesel engine 2 <i>Động cơ Diesel tàu thủy 2</i>		3.5
1.4.6	Marine Automation Systems		3.0

Code	Description	(A) VQF	LoC
		(B) ABET	
	<i>Hệ thống tự động tàu thủy</i>		
1.4.7	Marine Machinery Maintenance and Repair <i>Bảo dưỡng và sửa chữa máy tàu thủy</i>		3.5
1.4.8	Operating of Marine Propulsion Plant <i>Khai thác hệ động lực tàu thủy</i>		3.0
1.4.9	Graduation Training Course <i>Thực tập tốt nghiệp</i>		3.5
1.4.10	Graduation Thesis <i>Đồ án tốt nghiệp</i>	C3, 3c	3.5
1.4.11	Graduation Topics - Marine Auxiliary Machineries <i>Máy phụ tổng hợp</i>		3.5
1.4.12	Graduation Topics - Marine Propulsion Plant <i>Động lực tổng hợp</i>		3.5
2	PERSONAL AND PROFESSIONAL SKILLS AND ATTRIBUTES		
2.1	Engineering reasoning and problem resolving	S1, S3 3e, 3k	
2.1.1	Problem Identification and Formulation		
2.1.1.1	<i>Data and phenomena analysis</i>		3.5
2.1.1.2	<i>Hypothesis analysis</i>		3.5
2.1.2	Estimation and Qualitative Analysis		
2.1.2.1	<i>Understanding of the importance and limitations of problem</i>		3.5
2.1.2.2	<i>Analyzing the causes of problem</i>		3.5
2.1.3	Solution and Recommendation		
2.1.3.1	<i>Providing essential results of solutions and test data</i>		3
2.1.3.2	<i>Finding on discrepancies in results</i>		3
2.2	System thinking	3c	
2.2.1	Thinking Holistically		
2.2.1.1	<i>Understanding of a system, its function and behavior, and its elements</i>		2
2.2.1.2	<i>Understanding of the interactions external to the system, and the behavioral impact of the system</i>		2
2.2.2	Prioritization and Focus		

Code	Description	(A) VQF	LoC
		(B) ABET	
2.2.2.1	<i>Show all factors relevant to the system in the whole</i>		3
2.2.2.2	<i>Identify the driving factors from among the whole</i>		3
2.3	Attitudes, thought and learning	S3,C1 C3,3i	
2.3.1	Perseverance, urgency and will to deliver, resourcefulness and flexibility		
2.3.1.1	<i>Sense of responsibility for outcomes</i>		2
2.3.1.2	<i>Show self-confidence, courage and enthusiasm</i>		3
2.3.1.3	<i>Determination to accomplish objectives</i>		3
2.3.1.4	<i>Show adaptation to change</i>		3
2.3.2	Critical Thinking		
2.3.2.1	<i>Understanding of purpose and statement of the problem or issue</i>		2
2.3.2.2	<i>Proposing logical arguments (and fallacies) and solution</i>		3
2.3.2.3	<i>Analyze and exam the conclusions and implications</i>		3.5
2.3.3	Lifelong Learning and Educating		
2.3.3.1	<i>Having the motivation for continued self-education</i>		2
2.3.3.2	<i>Developing the skills of self-education</i>		3
2.4	Ethics, equity and other responsibilities	C1,3f	
2.4.1	Ethics, integrity and other social responsibilities		
2.4.1.1	<i>Choose one's ethical standards and principles</i>		3
2.4.1.2	<i>Show truthfulness</i>		3
2.4.2	Professional behavior		
2.4.2.1	<i>Show professional courtesy</i>		3
2.4.3	Staying Current on the World of Engineering		
2.4.3.1	<i>Apply the links between engineering theory and practice</i>		3.0
3	INTERPERSONAL SKILLS: TEAMWORK AND COMMUNICATION		
3.1	Teamwork	S2,S4, C1,C2,3d	
3.1.1	Forming Effective Teams	C4	
3.1.1.1	<i>Express team roles and responsibilities</i>		2.0
3.1.1.2	<i>Show the strengths and weaknesses of the team and its members</i>		3.0
3.1.2	Team Operation	C4	

Code	Description	(A) VQF	LoC
		(B) ABET	
3.1.2.1	<i>Identify goals and agenda</i>		2.0
3.1.2.2	<i>Prepare planning and facilitation of effective meetings</i>		3.0
3.1.2.3	<i>Practice effective communication (active listening, collaboration, providing and obtaining information)</i>		3.0
3.1.2.4	<i>Show positive and effective feedback</i>		3.0
3.2	Communications	S5,3g	
3.2.1	Written Communication		
3.2.1.1	<i>Show writing with coherence and flow</i>		3.0
3.2.1.2	<i>Show the writing with correct spelling, punctuation and grammar</i>		3.0
3.2.1.3	<i>Practice formatting the document</i>		3.5
3.2.2	Electronic/Multimedia Communication		
3.2.2.1	<i>Prepare an electronic presentations</i>		3.0
3.2.2.2	<i>Show communication ability by email</i>		3.0
3.2.3	Graphical Communication		
3.2.3.1	<i>Practice Sketching and drawing</i>		3.0
3.2.3.2	<i>Explain formal technical drawings</i>		2.0
3.3	Communication in foreign languages (English)	S6, 3g	
3.3.1	Band score \geq 450 in the TOEIC test		3.0
4	IMPLEMENTING, AND OPERATING SYSTEMS IN THE ENTERPRISE AND SOCIETAL CONTEXT		
4.1	External and societal context	3h, 3j	
4.1.1	Roles and Responsibility of Engineers		
4.1.1.1	<i>Defining the goals and roles of the engineering profession</i>		2.5
4.1.1.2	<i>Defining the responsibilities of engineers to society</i>		2.5
4.1.2	The Historical and Cultural Context		
4.1.2.1	<i>Show the diverse nature and history of human societies as well as their literary, philosophical and artistic traditions</i>		2.5
4.1.2.2	<i>Indicate the internationalization of human activity</i>		2.5
4.2	Enterprise and business context	3h, 3c	
4.2.1	Appreciating Different Enterprise Cultures		
4.2.1.1	<i>Identify the having awareness of the differences in process, culture, and discipline requirements in various enterprise cultures</i>		2.5
4.2.2	Enterprise stakeholders		

Code	Description	(A) VQF	LoC
		(B) ABET	
4.2.2.1	<i>Determine the obligations to stakeholders</i>		2.5
4.2.2.2	<i>Explain about differences the relationship between stakeholders (ship's owners, ship operators, deck and engine department, v.v.)</i>		2.5
4.3	Implementing	S2,3b, 3k	
4.3.1	Hardware Manufacturing Process		
4.3.1.1	<i>Practice the assembly of parts into larger constructs</i>		3.0
4.3.1.2	<i>Identify tolerances, variability, key characteristics and statistical process control</i>		2.0
4.3.2	Test, Verification, Validation, and Certification		
4.3.2.1	<i>Apply the verification of performance to system requirements</i>		3.0
4.3.3	Implementation Management		
4.3.3.1	<i>Explain the organization and structure for implementation</i>		2.0
4.3.3.2	<i>Identify the necessary of quality assurance for equipment while implementing</i>		2.0
4.3.3.3	<i>Apply methods for human health and safety while implementing.</i>		3.0
4.4	Operating	S3	
4.4.1	Training and Operations		
4.4.1.1	<i>Apply implementing of operation procedure</i>		3.5
4.4.2	System Improvement and Evolution		
4.4.2.1	<i>Identify contingency improvements/solutions resulting from operational necessity</i>		2.0
4.4.2.2	<i>Apply improvements based on needs observed in operation</i>		3.0
4.4.3	Operations Management		
4.4.3.1	<i>Identify the necessary of quality and safe assurance for equipment while operation</i>		2.0
4.4.3.2	<i>Apply methods for human health and safety while operating</i>		3.0

Level of capacity and taxonomy of learning domains

Level of capacity (LoC)	TAXONOMY OF LEARNING DOMAINS		
	Cognitive (Knowledge) (Bloom, 1956)	Affective (Attitude) (Krathwohl, Bloom, Masia, 1973)	Psychomotor (Skills) (Simpson, 1972)
1. Know or experience			1. Perception 2. Set
2. Get involved in and contribute to	1. Knowledge	1. Receiving phenomena	3. Guided response
3. Understand and explain	2. Comprehension	2. Responds to phenomena	4. Mechanism
4. Have practical and implementation skills	3. Application 4. Analysis	3. Valuing	5. Complex overt response 6. Adaptation
5. Lead and create	5. Synthesis 6. Evaluation	4. Organization 5. Internalizes values (characterization)	7. Origination

3. Career opportunities

Graduates can work in the following positions:

a. After graduation:

- Oiler, engineer at operational level on domestic and international commercial vessels: bulk carriers, bulk carriers, container ships, Ro-Ro ships ... or specialized ships such as passenger ships, oil or chemical tankers...
- Operation and maintenance of production lines in factories, industrial production lines;
- Engineers of oil and gas industry: operator in FSO, FPSO.

b. In near future:

- Become a technical manager of the fleet, factories.
 - Become Marine engineering officers at operational or management level of ships
 - Working in department of safety, legislation or Port State Control of Ports
 - To be a surveyor of the local and foreign Registers: Vietnam Register (VR), BV (France), ABS (USA), Class NK (Japan), DNV (Norway), Lloyd's Register (UK)
 - Participate in project design, technical consultancy, supervision, evaluation mechanical engineering projects and designs, including design, assembly, maintenance, repair and conversion.
 - To become managers or lecturers at training establishments (universities, colleges...) or departments, divisions, scientific and technological institutes in the same field;
 - Study postgraduate: Master of Science, PhD. in the Major of Marine engineering.
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4. Course content and structure

4.1. Principles of course design

The course is designed based on the principle that skills and attitudes are integrated into knowledge subjects. The integration is deployed by multi-disciplinary and timely approaches.

4.2. The volume of Knowledge, Skills and Capacity: 128 Credits

(Physical Education and National Defense Education are not included)

- Foundation knowledge (English and Basic Informatics are not included): 34 Credits.
- Core engineering fundamental knowledge: 57 Credits
- Advanced engineering science fundamental knowledge: 37 Credits

4.3. Course structure

No.	Subject ID	Subject	Credit	Meet learning outcomes	LoC	Semester	Prerequisites
FOUNDATION KNOWLEDGE			34				
1	18124E	Advanced Mathematics <i>Toán cao cấp</i>	4	1.1.1	3.0	2	
2	18201E	General Physics 1 <i>Vật lý 1</i>	3	1.1.2	3.0	2	
3	19106	Basic principles of Marxism-Leninism 1 <i>Những NLCB của CN Mác - Lê-nin 1</i>	2	1.2.1	3.0	1	
4	19109	Basic principles of Marxism-Leninism 2 <i>Những NLCB của CN Mác - Lê-nin 2</i>	3	1.2.2	3.0	2	
5	19201	Ho Chi Minh's Ideology <i>Tư tưởng Hồ Chí Minh</i>	2	1.2.3	3.5	3	19106
6	19301	Revolutionary strategies of Vietnam Communist Party <i>Đường lối CM của ĐCS.VN</i>	3	1.2.4	3.5	4	19201
7	11401E	General Law <i>Pháp luật đại cương</i>	2	1.2.5	2.5	3	
8	25111	General English 1 <i>Anh Văn cơ bản 1</i>	5	3.3.1/3.3.2 3.3.3/3.3.4	2.0	1	
9	25112	General English 2 <i>Anh Văn cơ bản 2</i>	5	3.3.1/3.3.2 3.3.3/3.3.4	2.5	1	
10	25113	General English 3	5	3.3.1/3.3.2	3.0	2	

No.	Subject ID	Subject	Credit	Meet learning outcomes	LoC	Semester	Prerequisites
		<i>Anh Văn cơ bản 3</i>		3.3.3/3.3.4			
CORE ENGINEERING FUNDAMENTAL KNOWLEDGE			57				
11	12113E	Introduction to Engineering <i>Nhập môn về kỹ thuật</i>	2	1.3.1	2.0	1	
12	18304E	Geometry - Basic Engineering Drawing <i>Hình họa - Vẽ Kỹ thuật</i>	3	1.3.2	3.0	4	
13	22501E	Material Science and Engineering <i>Vật liệu kỹ thuật</i>	3	1.3.3	2.5	3	
14	18405E	Engineering Mechanics <i>Cơ lý thuyết</i>	3	1.3.4	3.0	3	18124E
15	18504E	Strength of Materials <i>Sức bền vật liệu</i>	3	1.3.5	3.0	3	18405E
16	20101	Mechanic Practice <i>Thực tập cơ khí</i>	2	1.3.6	3.0	3	
17	12101E	Thermodynamics <i>Nhiệt kỹ thuật</i>	3	1.3.7	3.0	4	18124E 18201E
18	22502E	Manufacturing processes <i>Kỹ thuật gia công cơ khí</i>	3	1.3.8	3.0	4	22501E
19	25420	Professional English for Marine Engineering <i>Tiếng Anh chuyên ngành MKT</i>	3	1.3.9	3.0	2	
20	12401E	Automatic control theory <i>Lý thuyết điều khiển tự động</i>	3	1.3.10	3.0	4	18124E 18201E
21	13114E	Marine electrical equipment <i>Thiết bị điện</i>	3	1.3.11	3.0	5	
22	12106E	Measuring Instruments and Techniques <i>Thiết bị và kỹ thuật đo</i>	2	1.3.12	3.0	4	
23	12107E	Applicable Informatics <i>Tin học chuyên ngành MKT</i>	2	1.3.13	3.0	5	
24	12102E	Marine Refrigerator and Heat	3	1.3.14	2.5	5	12101E

No.	Subject ID	Subject	Credit	Meet learning outcomes	LoC	Semester	Prerequisites
		Exchanger <i>Máy lạnh và thiết bị trao đổi nhiệt tàu thủy</i>					
25	13171E	Marine electrical systems 1 <i>Điện tàu thủy 1</i>	2	1.3.15	2.0	5	
26	12116E	Maritime Law and Safe Working on Ships <i>Luật hàng hải và An toàn lao động trên tàu</i>	3	1.3.16	2.5	4	
27	13172E	Marine electrical systems 2 <i>Điện tàu thủy 2</i>	3	1.3.17	3.5	6	13171E
28	17102E	Microsoft office <i>Tin học văn phòng</i>	3	1.3.21	3.0	3	
29	12108E	Arrangement of Marine Propulsion Plant <i>Trang trí hệ động lực tàu thủy</i>	3	1.3.18	3.0	5	
30	26206E	Engineering Chemistry <i>Hóa Kỹ thuật</i>	3	1.3.19	3.0	4	
31	11110E	General Maritime <i>Đại cương hàng hải</i>	2	1.3.20	2.5	3	
ADVANCED ENGINEERING SCIENCE FUNDAMENTAL KNOWLEDGE			37				
32	12214E	Marine Boiler – Steam Turbine <i>Nồi hơi – Tua bin hơi tàu thủy</i>	3	1.4.1	3.0	5	12101E
33	12215E	Marine Auxiliary Machinery 1 <i>Máy phụ tàu thủy 1</i>	3	1.4.2	3.0	5	12101E
34	12217E	Marine diesel engine 1 <i>Động cơ Diesel tàu thủy 1</i>	3	1.4.3	3.0	5	
35	12216E	Marine Auxiliary Machinery 2 <i>Máy phụ tàu thủy 2</i>	3	1.4.4	3.5	6	
36	12218E	Marine diesel engine 2 <i>Động cơ Diesel tàu thủy 2</i>	3	1.4.5	3.5	6	12215E
37	12208E	Marine Automation Systems <i>Hệ thống tự động tàu thủy</i>	4	1.4.6	3.0	6	12101E 12217E

No.	Subject ID	Subject	Credit	Meet learning outcomes	LoC	Semester	Prerequisites
38	12219E	Marine Machinery Maintenance and Repair <i>Bảo dưỡng và sửa chữa máy tàu thủy</i>	4	1.4.7	3.5	6	12215E 12217E
39	12220E	Operating of Marine Propulsion Plant <i>Khai thác hệ động lực tàu thủy</i>	4	1.4.8	3.0	6	12218E
40	12503E	Graduation Training Course <i>Thực tập tốt nghiệp</i>	4	1.4.9	3.5	7	
41	12211E	Graduation Thesis <i>Đồ án tốt nghiệp</i>	6	1.4.10	3.5	8	12503E
42	12212E	Graduation Topics - Marine Auxiliary Machineries <i>Máy phụ tổng hợp</i>	3	1.4.11	3.5	8	12503E
43	12213E	Graduation Topics - Marine Propulsion Plant <i>Động lực tổng hợp</i>	3	1.4.12	3.5	8	12503E
I. Non-credit subjects			17				
I.1. Physical Education			4				
I.2. National Defense Education			8				
I.3. Basic Safety Training			5				

Semester	Subject ID	Subject	Themes of learning outcomes and Level of capacity (LoC)																													
			2.1			2.2		2.3			2.4			3.1		3.2			3.3				4.1		4.2		4.3			4.4		
			2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	2.3.1	2.3.2	2.3.3	2.4.1	2.4.2	2.4.3	3.1.1	3.1.2	3.2.1	3.2.2	3.2.3	3.3.1	3.3.2	3.3.3	3.3.4	4.1.1	4.1.2	4.2.1	4.2.2	4.3.1	4.3.2	4.3.3	4.4.1	4.4.2	4.4.3
4	19301	Revolutionary strategies of Vietnam Communist Party																														
	18304E	Geometry - Basic Engineering Drawing															TU2.5															
	12401E	Automatic control theory	TU3	TU3		IT2.5	IT2.5																									
	12101E	Thermodynamics	TU3	TU3	TU3			U3		TU2	U3																					
	22502E	Manufacturing processes	TU3							U3			TU3	U3	U3		TU3									TU3	U2.5	TU3			TU3	
	12106E	Measuring Instruments and Techniques		TU3	TU3																						TU3	TU3				
	26206E	Engineering Chemistry																									U3	U3				
	12116E	Maritime Law&Labor Safety																										TU3		TU3	TU3	
5	12102E	Marine Refrigerator and Heat Exchanger	ITU3.5	TU3	TU3								U3	U3															ITU2.5	ITU3	TU3	
	12214E	Marine Boiler – Steam Turbine TT	ITU3.5	TU3.5	TU3.5					TU3	ITU3	TU3	U3	U3		TU3						TU2.5						TU3	TU3	TU3		
	12215E	Marine Auxiliary Machinery 1	ITU3.5			TU3	TU3						U3	U3	U3														TU3	TU3	U3	
	12217E	Marine diesel engine 1	ITU3.5	ITU3.5	ITU3.5	ITU3.5	ITU3.5		TU3	U3		U3	U3	U3	U3	U3		U3	U3	U3		TU2.5	TU2.5	TU2.5	TU2.5	TU3.5	TU3.5		TU3		TU3	
	13114E	Marine electrical equipment	ITU3.5							TU3	ITU3		U3	U3																ITU3	TU3	
	13171E	Marine electrical systems 1																														
	12107E	Applicable Informatics								TU3	U3		U3																			
	12108E	Arrangement of Marine								U3	U3																	TU3			TU3	

Semester	Subject ID	Subject	Themes of learning outcomes and Level of capacity (LoC)																															
			2.1			2.2		2.3			2.4			3.1		3.2			3.3				4.1		4.2		4.3			4.4				
			2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	2.3.1	2.3.2	2.3.3	2.4.1	2.4.2	2.4.3	3.1.1	3.1.2	3.2.1	3.2.2	3.2.3	3.3.1	3.3.2	3.3.3	3.3.4	4.1.1	4.1.2	4.2.1	4.2.2	4.3.1	4.3.2	4.3.3	4.4.1	4.4.2	4.4.3		
		Propulsion Plant																																
6	12216E	Marine Auxiliary Machinery 2	TU3.5			TU3.5				U3	U3		U3	U3			TU3													TU3.5	TU3			
	12218E	Marine diesel engine 2	TU3.5			TU3.5		TU3.5				U3															TU3.5	TU3.5						
	12208E	Marine Automation Systems	TU3.5	TU3.5	TU3.5	TU3.5	TU3.5					U3	U3	U3	U3	U3				U3			TU2.5					TU3.5		TU3.5		TU3		
	12220E	Operating of Marine Propulsion Plant	TU3.5			TU3.5	TU3.5				U3		U3	U3	U3	U3							TU2.5										TU3	
	12219E	Marine Machinery Maintenance and Repair	TU3.5	TU3.5		TU3.5						TU3.5				U3	U3	U3	U3	U3									TU3		TU3	U3		
	13172E	Marine electrical systems 2	TU3.5			TU3.5													TU3												TU3.5	TU3		
7	12503E	Graduation Training Course						U3					U3		U3	U3	U3	U3													TU3.5	TU3	TU3	
8	12211E	Graduation Thesis	TU3.5	TU3.5	TU3.5			U3					U3		U3	U3	U3		U3		U3								TU3.5		TU3.5			
	12212E	Extra Graduation Topics - Marine Auxiliary Machineries	TU3.5	TU3.5	TU3.5								U3																	TU3.5		TU3.5		
	12213E	Extra Graduation Topics - Marine Propulsion Plant	TU3.5	TU3.5	TU3.5								U3					U3														TU3.5		

4.6. Students' capacity assessment

Semester	THEMES OF LEARNING OUTCOMES AND LEVEL OF CAPACITY																																													
	1.1		1.2					1.3															1.4																							
	1.1.1	1.1.2	1.2.1	1.2.2	1.2.3	1.2.4	1.2.5	1.3.1	1.3.2	1.3.3	1.3.4	1.3.5	1.3.6	1.3.7	1.3.8	1.3.9	1.3.10	1.3.11	1.3.12	1.3.13	1.3.14	1.3.15	1.3.16	1.3.17	1.3.18	1.3.19	1.3.20	1.3.21	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.4.6	1.4.7	1.4.8	1.4.9	1.4.10	1.4.11	1.4.12						
1			3					2																																						
2	3	3		3											3																															
3					3.5		2.5			2.5	3	3	3														2.5	3																		
4						3.5			3					3	3		3	3					2.5			3																				
5																	3	3	2.5	2					3			3	3	3																
6																																														
7																																											3.5			
8																																												3.5	3.5	3.5
LO	3	3	3	3	3.5	3.5	2.5	2	3	2.5	3	3	3	3	3	3	3	3	3	3	2.5	2	2.5	3.5	3	3	2.5	3	3	3	3	3	3	3.5	3.5	3	3.5	3	3.5	3	3.5	3.5	3.5	3.5		

Semester	THEMES OF LEARNING OUTCOMES AND LEVEL OF CAPACITY																														
	2.1			2.2		2.3			2.4			3.1		3.2			3.3				4.1		4.2		4.3			4.4			
	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	2.3.1	2.3.2	2.3.3	2.4.1	2.4.2	2.4.3	3.1.1	3.1.2	3.2.1	3.2.2	3.2.3	3.3.1	3.3.2	3.3.3	3.3.4	4.1.1	4.1.2	4.2.1	4.2.2	4.3.1	4.3.2	4.3.3	4.4.1	4.4.2	4.4.3	
1	2	2	2	2		2.5		2	2			2	2	2		2	2.5	2.5	2.5	2.5	2	2	2	2			2				
2																	3	3	3	3											
3	3	3	3	2.5	2				2		2	3	3	3	3						2	2	2	2	3	2	3			2	
4	3	3	3	2.5	2.5	3		3	3		3	3	3			3									3	3	3		3	3	
5	3.5	3.5	3.5	3.5	3.5		3	3	3	3	3	3	3	3	3	3	3	3	3		2.5	2.5	2.5	2.5	3.5	3.5	3	3	3	3	
6	3.5	3.5	3.5	3.5	3.5		3.5	3	3	3	3	3	3	3	3	3		3				2.5				3.5	3.5	3	3.5	3	3
7						3				3		3	3	3	3														3.5	3	3
8	3.5	3.5	3.5			3				3		3	3	3		3		3								3.5		3.5			
LO	3.5	3.5	3.5	3.5	3.5	3	3.5	3	3	3	3	3	3	3	3	3	3	3	3	3	2.5	2.5	2.5	2.5	3.5	3.5	3	3.5	3	3	

4.7. Schedule

Semester 1									
No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	25111	General English 1	5	75				I	
2	25112	General English 2	5	75				I	
3	19106	Basic principles of Marxism-Leninism 1	2	20	20			I	
4	19109	Basic principles of Marxism-Leninism 2	3	35	20			I	19106
5	12113E	Introduction to Engineering	2	30				III	
		TOTAL	17						
Semester 2									
No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	25113	General English 3	5	75				I	
2	25420	Professional English for Marine Engineering	3	45				I	
3	19201	Ho Chi Minh's Ideology	2	20	20			I	19106
4	19301	Revolutionary strategies of Vietnam Communist Party	3	35	20			I	19201
5	18124E	Advanced Mathematics	4	60				I	
6	18201E	General Physics 1	3	45				I	
		TOTAL	20						
Semester 3									
No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	18304E	Geometry - Basic Engineering Drawing	3	45				I	

2	22501E	Material Science and Engineering	3	40	10			I	
3	18405E	Engineering Mechanics	3	45				I	18124E
4	17102E	Microsoft office	3	35	20			I	
5	11110E	General Maritime	2	30				I	
6	11401E	General Law	2	25	10			I	
7	12116E	Maritime Law and Safe Working on Ships	3	45				I	
8	20101	Mechanic Practice	2					II	
		TOTAL	21						

Semester 4

No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	12108E	Arrangement of Marine Propulsion Plant	3	40	10				
2	18504E	Strength of Materials	3	42	6			I	18405E
3	12401E	Automatic control theory	3	40	10			I	18124E 18201E
4	12106E	Measuring Instruments and Techniques	2	26	8			I	
5	22502E	Manufacturing processes	3	40	10			I	22501E
6	12101E	Thermodynamics	3	45				I	18124E 18201E
7	26206E	Engineering Chemistry	3	40	10			I	
		TOTAL	20						

Semester 5

No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	12102E	Marine Refrigerator and Heat Exchanger	3	42	6			I	12101E
2	12214E	Marine Boiler – Steam Turbine	3	39	12			I	12101E
3	12215E	Marine Auxiliary	3	39	12			I	12101E

		Machinery 1							
4	12217E	Marine diesel engine 1	3	35	20			I	
5	13114E	Marine electrical equipment	3	40	10			I	
6	12107E	Applicable Informatics	2	30				I	
7	13171E	Marine electrical systems 1	2	30				I	
		TOTAL	19						

Semester 6

No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	12216E	Marine Auxiliary Machinery 2	3	39	12			I	12215E
2	12218E	Marine diesel engine 2	4	45		X		I	12101E 12217E
3	12208E	Marine Automation Systems	3	40	10				12401E
4	12220E	Operating of Marine Propulsion Plant	4	40	10	X		I	12218E
5	12219E	Marine Machinery Maintenance and Repair	4	45	30			I	12215E 12217E
6	13172E	Marine electrical systems 2	3	40	10			I	13171E
		TOTAL	21						

Semester 7

No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
1	12503E	Graduation Training Course	4						
		TOTAL	4						

Semester 8

No.	Subject ID	Subject	Credit	THE	EXP	ASM	PRO	Type	Prerequisites
II. Optional			6/12						

1	12211E	Graduation Thesis	6						12503E
2	12212E	Graduation Topics - Marine Auxiliary Machineries	3	45				I	12503E
3	12213E	Graduation Topics - Marine Propulsion Plant	3	45				I	12503E
		TOTAL	6						

Total: 128 Credits

5. Subjects' content