University of Kyrenia
Maritime Vocational School
Ship Machinery
Course Contents

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MTH101	**Calculus I**	**3,2,0**	**4**	**6**	**Core**
This course is designed to develop the topics of differential and integral calculus. Emphasis is placed on limits, continuity, derivatives and integrals of algebraic and transcendental functions of one variable. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to derivative-related problems with and without technology.					
Course Code	**Course Name**	**(T, A, L)**	**Credit**	**ECTS**	**Core/Elective Course**
MPH101	**Physics for Mariners I**	**3,0,2**	**4**	**6**	**Core**
This course is designed to get familiar and understand conceptually topics of physics and mechanics. To apply the methods of solving elementary mechanics problems that leads to the first insights into the rudiments of related fields in engineering sciences. To analyze the kinetic problems of one dimension and two dimensions motions by using vectors. To apply the fundamental methods of motions due to applied forces. To apply and integrate the basic physical sciences and the principles of engineering sciences into working practical knowledge.					
Course Code	**Course Name**	**(T, A, L)**	**Credit**	**ECTS**	**Core/Elective Course**
MEC101	**Technical Drawing**	**1,2,0**	**2**	**4**	**Core**
Technical Drawing offers prerequisite knowledge and skills for a number of the technical and vocational areas of work. The subject helps students to develop spatial intelligence, imaginative and drawing skills so that they would become creative and help to solve many of the social, economic and professional problems that need designs before production.					
Course Code	**Course Name**	**(T, A, L)**	**Credit**	**ECTS**	**Core/Elective Course**
MRE101	**Introduction to Marine Engine**	**2,1,0**	**2,5**	**3**	**Core**
The aim of the course is to introduce the basic concepts of ship machinery and equipments, identification of main and auxiliary machines, power generation systems, introduction of propeller machinery, introduction of basic engine superstructure, recognition of auxiliary devices by systems which give motion to ship motors. learning of auxiliary components with parts of basic working principles, classification and basic functions of machinery and deck auxiliary equipments.					
Course Code	**Course Name**	**(T, A, L)**	**Credit**	**ECTS**	**Core/Elective Course**
MED101	**Workshop I**	**0,0,4**	**2**	**4**	**Core**
The aim of Workshop I is to teach safety protection in workshops, marking of the materials, usage of hand tools and measurement techniques for production. Joint and welding basic knowledge and entry to the welding process.					
Course Code	**Course Name**	**(T, A, L)**	**Credit**	**ECTS**	**Core/Elective Course**
MEC205	**Material Science**	**2,0,0**	**2**	**4**	**Core**

The aim of material science is to teach methods of production of cast iron, steel and nonferrous metals. Designation and classification of all metals the principle of metal casting. The plastic working of metals and its principles. Classification and assessment techniques of materials and welding techniques and principles. Material improvement and heat treatment technology basics. Marine engineering materials and essential criteria on different applications.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MEL101	**Introduction to Marine Electronics**	**2,0,1**	**2,5**	**3**	**Core**

Introduction to Electronics is intended to be offered for engineering studies; students who are planning to become a captain or mechanic. Topics include practicing diodes in circuits, transistors, transistors in circuits, transistor amplifier. Field effect transistor. Feedback amplifiers and oscillators.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
NRC102	**Ship Construction**	**2,2,0**	**3**	**4**	**Core**

In this course students will acquire knowledge about the construction and general arrangement of ships and various components of the vessel. They will learn about the layout and design of the ship, including the arrangement of holds, engine room, peak tanks, double-bottom tanks, hatchways, bulkheads, cargo tanks, deck plating, frames, brackets, transverse frames, deck beams, shell plating, and other relevant structural elements. Additionally, this course will provide studentswith a comprehensive understanding of the minimum requirements for training seafarers on tanker ships, as specified by the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW). They will learn about the essential knowledge and skills needed to operate and work on tanker vessels safely and efficiently.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
SAF101	**Maritime Safety I**	**2,3,0**	**3,5**	**4**	**Core**

The course will be carried out according to the IMO Model Courses 1.13, 1.21, 3.26, 3.27, and the national regulation “Egitim Sinav Yonergesi 2018” of the Turkish Republic. Successful students will be eligible to obtain mandatory STCW certificates of (1); Personal Safety and Social Responsibility, (2); Security Familiarization, (3); Security Awareness, (4) Designated Security Duties, and (5) Elementary First Aid. The contents of the course are; Introduction to Safety and Emergencies. Introduction to SOLAS, MARPOL, ISM and ISPS. Ship and Safety Familiarization. Safety on board and its applications. Personal safety and social responsibilities on board (Emergency Procedures, Safe Working Practices, Pollution Prevention, Effective Communication and Human Relations, Avoiding fatigue). Location, familiarisation and usage of personal life-saving appliances on board. Maritime Security Awareness and Training. Elementary first aid, including lab practice in the university hospital

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MTH102	**Calculus II**	**3,2,0**	**4**	**6**	**Core**

This course is designed to develop the topics of series, parametric equations, vector and surfaces, vector valued functions, partial differentiation, multiple integrals and vector calculus. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to vector calculus, parametric equations and polar coordinates, multiple integrals problems with and without technology.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MPH102	**Physics for Mariners II**	**3,2,0**	**4**	**6**	**Core**

This course is designed to get familiar and understand conceptually topics of physics and electromagnetic. To get familiar and understand conceptually topics of electromagnetism. To apply the methods of solving elementary electromagnetism problems that lead to the first insights into the rudiments of related fields in engineering sciences. To analyze simple resistive circuits. To apply the fundamental methods of Circuit theory on DC circuits. To apply and integrate the basic physical sciences and the principles of engineering sciences into a working practical knowledge.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED104	**Diesel Engines I**	**2,0,2**	**3**	**5**	**Core**

The aim of Diesel Engines is to gain knowledge about Diesel Engine theory, Diesel Engine's thermodynamic cycle dealing with the fuel burning synthesis for different fuel types in terms of internal combustion engine. Diesel engine parts and kinematic components are the main course objective on marine diesel engines.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
SAF102	**Maritime Safety II**	**2,1,0**	**2,5**	**3**	**Core**

The course will be carried out according to the IMO Model Courses 1.19, 1.20, 1.23, and the national regulation "Egitim Sinav Yonergesi 2018" of the Turkish Republic. Successful students will be eligible to obtain mandatory STCW certificates of (1); Personal Survival Techniques, (2); Fire Prevention and Fire Fighting, (3); Proficiency in Survival Crafts and Rescue Boats (Other than Fast Rescue Boats). The contents of the course are; Mustering in emergencies onboard. The operation, maintenance, launching and recovery of Survival Crafts and Rescue Boats. Evacuation procedures and survival techniques at sea. Dangers, life and best practices in survival crafts. Preventing and fighting fire onboard. Firefighting methods, operation and maintenance of the firefighting equipment.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED102	**Workshop II**	**0,0,4**	**2**	**4**	**Core**

Workshop equipment usage for production and joint applications. Marine repair techniques on carbon steels and other structural ship elements under safe working obligations.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
SWM102	**Swimming**	**0,2,0**	**1**	**2**	**Core**

The course "Swimming Principles and Practical Application" focuses on teaching students the essential principles of swimming and providing practical training in a pool environment. The primary objective of this course is to ensure that students possess the necessary swimming skills and water survival techniques in case of emergencies or dangerous situations at sea, such as fires or abandoning the ship. Swimming proficiency is crucial for the safety and survival of seafarers during such incidents .

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
PED102	**Physical Education**	**0,2,0**	**1**	**2**	**Core**

This couse is designed to improve the physical fitness of the students which will help them during their seagoing training for better adaptation and maintaining good physical condition.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED106	**Maritime English I**	**2,0,0**	**2**	**3**	**Core**

The aim is to build up necessary vocabulary on marine engineering terminology that will be used as technical documentation, main source objectives related to machinery on marine engineering path and assist students in a certain reading comprehension.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
CMP152	Introduction to Computer	2,0,2	3	3	Core

This course is designed to give students an understanding of how a computer works its capabilities, limitations, and applications. This course is intended as a first computer course and it is not assumed that the student has background knowledge on the subject. The course will focus on theoretical issues during the first period, followed by application and hands-on skills.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED209	Maritime English II	2,0,0	2	3	Core

The aim is to teach the students English who are at maritime schools and cadets. It takes the goal to build up necessary vocabulary on technical documentation related to machinery and assist in reading comprehension. Course will be advanced marine engineering terminology for marine management activities.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED201	Operation and Maintenance of Main and Auxiliary Machinery I	3,0,2	4	5	Core

It is to provide basic information about the ship machinery operations related to the purpose of maintenance and repair methods of operation of ship main and auxiliary machines. During the life of the machine, the manufacturer's product inspection controls handle the spare part information, operation, disassembly and mounting details of different machine concepts for different machine types, with the size criteria of large parts. The course is at operational level and aims to improve the student in terms of preparation before the internship.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED203	Marine Auxiliary Machinery I	2,1,0	2,5	4	Core

The aim of Marine Auxiliary Machinery I is to gain basic knowledge about the different types of pumps, valve and piping systems used in main and auxiliary ship systems.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MEC207	Thermodynamics I	3,0,0	3	5	Core

The aim of thermodynamics I is to gain basic knowledge about the fundamental concepts of energy and energy transformations with focus on engineering utilization of thermodynamic principles. The system description is done, and the first law of thermodynamics is described in detail. The application of the first law of thermodynamics on different types of steady-state devices and cycles will be carried out.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED215	Marine Diesel Engines II	2,0,2	3	4	Core

The aim of introduction to marine engineering is to gain knowledge about the introduction to marine equipment, Main Engines, Aux. Engines dealing with the operation and maintenance of parts of engines. Main and auxiliary diesel engines, Supportive systems of Main propulsion engines and auxiliary diesel engines. Operational facilities and activities on diesel engines. Watchkeeping on engine operations with diesel engine auxiliary systems.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED213	Marine Engine’s simulator	1,0,3	2,5	4	Core

The aim of the Engine Room Simulator course is to demonstrate full functional engine room and vessel applications to the students under the STCW code 6.10 model course and regulation. The aim of the lecture is to improve practical usage of theoretical knowledge under supervision of different scenarios. Students will gain habits for critical thinking and risk management. Handover procedures will lead them to live in a team management activity to prepare vessels.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED205	**Marine Boilers & Operation**	**2,0,0**	**2**	**2**	**Core**

The aim of introduction to Marine Boilers & Operation is to gain knowledge about Marine Boilers dealing with the components and supportive systems to preparation of operational activities with marine engineering knowledge onboard vessels. The basic concepts of marine boiler and systems with operational marine engineering terminology. Technical essential performance criteria of system requirements. Thermodynamic assessment of a marine boiler design concept. Operational and repair facility requirements and aids to maintain equipment on expected performance.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED207	**Hydraulic Pneumatic & Automatic Control**	**2,0,1**	**2,5**	**4**	**Core**

The aim of Hydraulic & Pneumatic covers the basics of pneumatic, electro pneumatic and hydraulic control circuits in a complex mechatronic system. Students will learn the functions and properties of control elements based upon physical principles, and the roles they play within the system. Technical documentation such as data sheets, circuit diagrams, displacement step diagrams and function charts will also be covered. By understanding and performing measurements on the pneumatic and hydraulic control circuits, students will learn and apply troubleshooting strategies to identify, localize and correct malfunctions. Preventive maintenance of (electro) pneumatic and hydraulic components as well as safety issues within the system will be discussed.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
AIT101	**Ataturk's Principles**	**0,0,0**	**0**	**1**	**Core**

The reasons that prepared the collapse of the Ottoman Empire and the Turkish Revolution. Disintegration of the Ottoman Empire, Tripoli War, Balkan Wars, First World War. Armistice of Mudros. The situation of the country in the face of the occupations and the reaction of Mustafa Kemal, the departure of Mustafa Kemal to Samsun. The opening of the Turkish Grand National Assembly of the National Struggle. Treaty of sevr. The Lausanne Peace Treaty. Atatürk's Principles: Republicanism, Nationalism. Populism, Statism. Secularism, Revolutionism.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
LAW251	**Maritime Law and International Marine Conventions**	**2,2,0**	**3**	**4**	**Core**

In this module on the international law of the sea, students will be introduced to the comprehensive legal framework governing maritime activities. The module covers various aspects of international law related to the sea, including jurisdictional zones and principles recognized in international law. The module begins by exploring the principles and regulations governing the territorial sea, archipelagic waters, international straits, contiguous zone, continental shelf, exclusive economic zone (EEZ), high seas, and deep seabed. Students will examine the rights and responsibilities of coastal states and the legal implications of these different maritime zones. The module also delves into the resolution of competing claims to maritime areas and resources. Students will learn about the methods and mechanisms available for resolving disputes between states concerning maritime boundaries and resource exploitation.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
SAF214	**Maritime Safety III**	**2,2,0**	**3**	**5**	**Core**

The course will be carried out according to the IMO Model Courses 1.24, 1.28, and the national regulation "Egitim Sinav Yonergesi 2018" of the Turkish Republic. Successful students will be eligible to obtain mandatory STCW certificates of (1); Proficiency in Fast Rescue Boat, (2); Crowd Management, Passenger Safety and Safety Training for Personnel Providing Direct Services to Passengers in Passenger Spaces. The contents of the course are; Assisting passengers for assembling in Muster Stations in emergencies. The operation, maintenance, launching and recovery methods of the Fast Rescue Boats. Abandoning Ship / Evacuation Procedures in cargo and passenger ships. Evacuation procedures and survival techniques at sea.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED204	**Operation and Maintenance of Main and Auxiliary Machinery II**	**3,0,2**	**4**	**5**	**Core**

The aim of introduction to marine engineering is to gain main knowledge about the marine machinery operations dealing with the deck machinery maintenance and repair methods. Measurement controls of manufacturer product on machinery system lifetime, dimensional critization of major parts and spare part knowledge of different auxiliary machinery concepts. Learning of auxiliary machinery systems and machinery repair concepts. Literature knowledge of measurement and performance analysis of the running parts, motional parts, redial part and bearing fracture models. Technics of dismantling and mounting of sensitive elements of the machinery system. Axial bearing criteria. Communicational facility applications in case-studies.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED208	**Marine Electrotechnology I**	**2,1,0**	**2,5**	**3**	**Core**

Electrical circuits, diagrams, distribution panels, fuses. All electrical machineries, Working principle of AC DC transformers, electric motors and generators, starters of motors, mono-phase and three-phase electricity. Maintenance, determination of disorders and repair. Take precautions for safety on marine applications.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
TUR102	**Turkish Language**	**0,0,0**	**0**	**1**	**Core**

Reading passages related to the chapter; grammar studies; vocabulary and translation activities; listening activities; debates on current issues related to the department (Repetition of tenses, Internet history, Health and medicine, passive frameworks, social issues, Environmental issues, Repetition of modals, Law and punishment, repetition of adjective phrases, Language and Literature, Repetition of noun phrases.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
MED202	**Marine Auxiliary Machinery II**	**2,1,0**	**2,5**	**4**	**Core**

The aim of Marine Auxiliary Machinery II is to gain basic knowledge about the different types of pumps used in main engine and loading and unloading operation. Also pipelines on ships, mooring winches, windlass, cranes, davits crane and steering gears will be distinguished.

Course Code	Course Name	(T, A, L)	Credit	ECTS	Core/Elective Course
FGP299	**Graduation Project**	**0,4,0**	**2**	**4**	**Core**

In this course, students will engage in theoretical and technological investigations to solve a well-defined problem in their field of study. They will conduct research, analyze data, and apply relevant theories and technologies to address the problem at hand. The focus is on practical problem-solving and finding innovative solutions. Once the problem has been successfully solved, students will be required to present their findings using visual tools. This may include creating graphs, charts, diagrams, or other visual representations to effectively communicate their results. The objective is to present the research outcomes in a clear and visually appealing manner that facilitates understanding and engages the audience. By combining theoretical knowledge, technological expertise, and effective visual presentation skills, students will not only demonstrate their understanding of the subject matter but also showcase their ability to apply their knowledge to real-world problems and communicate their findings effectively.