University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Cargo Handling and Stability							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
CRG202	II	Spring	3	5	2	2	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				20	30	30	20
Course Venue and Time				Tuesday / 10:30 – 13:20			
Instructor information				**Cpt. Mehmet Emin Debeş** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4060 mehmetemin.debes@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides students with a comprehensive understanding of cargo handling operations and ship stability principles. It covers the structural arrangements of cargo spaces, the use and maintenance of cargo handling equipment, and the preparation of holds for safe loading and discharging. Emphasis is placed on the effects of different cargo types—such as containers, bulk cargo, grain, and hazardous goods—on a ship's seaworthiness, stability, and safety. Students will learn methods of stowage, securing, and protection of cargo, as well as procedures for inspection, damage detection, and corrosion prevention. The course also introduces stability calculations, including displacement, draft surveys, trim, GM, stress analysis, and the impact of density variations. Practical applications focus on solving stability and trim problems after cargo operations, with special attention to safety requirements, international regulations, and best practices in cargo management.
Course Aims and Objectives	The primary aim of this course is to provide students with the fundamental knowledge and skills required to manage cargo operations safely and to ensure ship stability under various loading conditions. The course also aims to develop a strong understanding of the relationship between cargo handling, ship structure, and overall seaworthiness. • Understand the design and functions of cargo spaces and cargo handling equipment. • Acquire knowledge of different cargo types (general cargo, container, bulk cargo, grain, and hazardous cargo) and their impact on ship operations and safety. • Learn safe practices of cargo stowage, securing, and protection to minimize risks during voyages. • Identify structural elements critical to ship safety and develop the ability to recognize, inspect, and report damage or corrosion. • Apply international safety regulations and survey procedures in cargo handling and ship maintenance. • Perform essential stability calculations, including displacement, draft surveys, trim, GM, and stress analysis. • Solve practical problems related to stability, trim, and stress before and after cargo operations.

	• Develop a professional awareness of the importance of cargo safety, stability management, and compliance with international maritime standards.
Course Learning Outcomes	**CLO1:** Identify and describe the main cargo spaces, cargo handling equipment, and structural arrangements used on different types of ships. **CLO2:** Explain the principles of safe cargo handling, stowage, securing, and preservation of cargo under various operational and environmental conditions. **CLO3:** Analyze the effects of different cargo types (e.g., bulk, containers, deck cargo, dangerous goods) on ship stability, seaworthiness, and safety. **CLO4:** Apply appropriate inspection and monitoring techniques to detect damage, corrosion, or structural failures in cargo holds, hatches, and ballast tanks. **CLO5:** Demonstrate knowledge of international regulations and survey programs related to cargo safety and ship structural integrity. **CLO6:** Perform displacement, draft survey, trim, stability, and stress calculations using theoretical and practical methods. **CLO7:** Evaluate the impact of cargo distribution and environmental factors on the ship's trim, stability, and longitudinal balance. **CLO8:** Develop cargo plans and calculate loading/unloading operations with consideration for safety, efficiency, and regulatory compliance. **CLO9:** Communicate effectively during cargo operations to ensure coordination, safety, and proper record-keeping. **CLO10:** Integrate theoretical and practical knowledge to optimize cargo handling and ship stability in real-world operational scenarios.

Content of the Course

Week	*Subject*
1	Introduction to Cargo Handling and Ship Stability • Overview of cargo operations and stability concepts • Types of cargo ships
2	Cargo Spaces and Equipment I • Cargo compartments and arrangements • Cargo handling gears: winches, derricks, cranes
3	Cargo Spaces and Equipment II • Hatch covers and their maintenance • Preparation of dry cargo holds for loading • Cargo stowage and securing
4	Cargo Operations • Preparations for loading and discharging • Supervision and safety measures during cargo operations
5	Effect of Cargo on Seaworthiness I • Draft, trim, and stability in relation to cargo distribution • Cargo protection methods
6	Effect of Cargo on Seaworthiness II • Deck cargo considerations • Containerized cargo handling • Bulk cargo operations
7	Special Cargo Types • Carriage of bulk grain • Hazards and precautions with dangerous, hazardous, and harmful cargoes
8	Safe Cargo Handling and Supervision I • Supervision of cargo operations • Effective communication during loading and discharging • Identification of damage due to corrosion and heavy weather
9	Safe Cargo Handling and Supervision I • Supervision of cargo operations

	• Effective communication during loading and discharging • Identification of damage due to corrosion and heavy weather
10	Inspection Procedures and Damage Assessment • Reliable methods for damage detection and assessment • Objectives of the Enhanced Survey Program (ESP)
11	Cargo Handling Equipment and Safety • Maintenance and safety of cargo gears • Tanker cargo systems: piping arrangements and pumping systems • Safe entry into enclosed spaces
12	Cargo Planning • General cargo calculations and planning for different ship types
13	Ship Trim, Stability, and Stress Calculations I • Displacement and draft survey methods • Trim calculation • GM (metacentric height) determination
14	Ship Trim, Stability, and Stress Calculations II • Stress calculations • Longitudinal stability and the effect of density changes • Transfer problems
15	Ship Trim, Stability, and Stress Calculations II • Stress calculations • Longitudinal stability and the effect of density changes • Transfer problems

Methods and Techniques used in the Course

Lectures and Presentations: Core theoretical concepts are delivered through instructor-led lectures supported by multimedia presentations.

Classroom Discussions: Interactive discussions are encouraged to enhance critical thinking and problem-solving related to cargo handling and stability cases.

Case Studies and Problem-Solving: Real-life scenarios and problem sets are analyzed to apply theoretical knowledge to practical situations, particularly in cargo damage, survey programs, and stability challenges.

Mathematical and Simulation-Based Exercises: Stability, stress, draft survey, and trim calculations are practiced through structured exercises and software-supported simulations.

Demonstrations: Cargo handling equipment, safety procedures, and inspection methods are introduced via demonstrations, videos, and technical manuals.

Collaborative Group Work: Students work in teams to develop cargo plans, conduct inspections, and present findings, promoting teamwork and professional communication.

Assignments and Reports: Students prepare written reports and assignments to deepen their understanding of cargo operations and vessel stability.

Examinations and Quizzes: Regular assessments are used to evaluate students' mastery of theoretical knowledge and practical applications.

Sample Questions

- **Define and compare** the main types of cargo ships, giving examples of their cargo arrangements and operational uses.
- **Explain** the procedures for preparing a cargo hold before loading dry bulk cargo.
- A vessel has a **displacement of 22,000 tons** at a draft of 9.2 m. If 1,500 tons of cargo is loaded uniformly, calculate the new draft using the given TPC.
- **Discuss** the main causes of cargo damage during loading and discharging operations and propose preventive measures.
- **Illustrate** the effects of loading containers on deck with respect to ship stability and seaworthiness.
- A ship trims by the stern after loading. **Explain** the factors causing this condition and describe how it can be corrected.
- **Calculate** the metacentric height (GM) given displacement, KB, BM, and KG values. Comment on the ship's stability.
- **Describe** the safety precautions that must be taken before entering an enclosed space such as a cargo hold or ballast tank.
- **Evaluate** the role of the Enhanced Survey Program in maintaining cargo hold integrity and preventing structural failure.
- **Prepare** a cargo plan for loading a combination of bulk and container cargo, ensuring compliance with stability requirements.

Materials Used in the Course

Core Textbooks

- Eyres, D.J., & Bruce, G.J. *Ship Construction*. Elsevier.
- Rawson, K.J., & Tupper, E.C. *Basic Ship Theory*. Butterworth-Heinemann.
- Branch, A.E. *Elements of Shipping*. Routledge.

International Conventions and Guidelines

- *International Convention for the Safety of Life at Sea (SOLAS)*.
- *International Maritime Solid Bulk Cargoes (IMSBC) Code*.
- *International Maritime Dangerous Goods (IMDG) Code*.
- *Code of Safe Practice for Cargo Stowage and Securing (CSS Code)*.
- *Enhanced Survey Program (ESP) Guidelines*.

Supplementary Materials

- Cargo handling manuals, stability booklets, and trim & stability tables of various ship types.
- Hydrostatic curves and cross curves of stability for practice exercises.
- IMO circulars and technical reports on cargo safety.

Digital and Simulation Tools

- Ship stability and cargo planning software.
- Onboard cargo management and loading computer systems.
- Multimedia presentations and video materials demonstrating cargo operations and accident case studies.

Practical Training Resources

- Shipboard visits and field observations where applicable.
- Laboratory models for stability experiments.
- Case studies of real cargo handling incidents and stability failures.

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.				✓	Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.				✓	Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.			✓		Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.				✓	Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.			✓		Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.			✓		Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	**CLO10**
PO1	3	3	3	2	3	2	2	2	2	3
PO2	1	2	2	2	2	3	2	2	2	2
PO3	2	2	3	2	3	3	2	3	2	3
PO4	1	2	2	2	2	3	2	2	2	2
PO5	3	3	3	2	3	3	3	3	2	3
PO6	2	2	2	2	2	2	2	2	2	2
PO7	1	1	1	1	1	1	2	1	1	2
PO8	1	1	1	1	1	1	1	1	1	1
PO9	1	1	1	1	1	1	1	1	0	1
PO10	1	2	2	2	2	2	2	2	2	2
PO11	1	1	1	1	1	1	1	1	1	2
PO12	1	1	1	1	1	1	1	1	1	2

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1 – Cargo Spaces & Equipment	Lecture, Multimedia Presentation, Ship Model Demonstrations	Quizzes, Assignments, Lab/Practical Exercises
CLO2 – Safe Cargo Handling Principles	Lecture, Case Studies, Hands-on Exercises	Assignments, Practical Exams, Observation
CLO3 – Cargo Effects on Stability & Safety	Problem-Solving Sessions, Simulation Exercises	Assignments, Quizzes, Practical Exercises
CLO4 – Inspection & Monitoring Techniques	Lab Exercises, Hands-on Demonstrations	Lab Reports, Observation, Practical Exams
CLO5 – Cargo Regulations & Survey Programs	Lecture, Tutorials, Discussions	Quizzes, Assignments, Participation
CLO6 – Displacement, Draft, Trim & Stress Calculations	Lecture, Problem-Solving Sessions, Simulation Exercises	Assignments, Midterm Exam, Practical Exercises
CLO7 – Cargo Distribution & Environmental Effects	Case Studies, Simulation Exercises	Assignments, Practical Exams, Quizzes
CLO8 – Cargo Planning & Operations	Scenario-Based Exercises, Group Projects	Project Reports, Lab Exercises, Assignments
CLO9 – Communication during Cargo Operations	Role-Playing, Bridge/Deck Simulations	Observation, Assignments, Practical Exams
CLO10 – Applied Cargo & Stability Integration	Integrated Simulations, Case Studies, Problem-Based Learning	Project Reports, Practical Exams, Assignments

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**3**	**45**
Midterm Exam	**1**	**3**	**3**
Preparation for Midterm Exam	**1**	**6**	**6**
Final Exam	**1**	**3**	**3**
Preparation for Final Exam	**1**	**6**	**6**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	**1**	**15**	**15**
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**2**	**10**	**20**
Individual Reading / Research	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**128**
ECTS Credit			**5**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	15	10
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	2	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	1	10
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	40
Total	**5**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: First Aid and Medical Care							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
FMC202	II	Spring	3	3	2	2	0
Course type: Compulsory Elective				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				30	-	-	70
Course Venue and Time				Tuesday / 08:30 – 12:20			
Instructor information				**Uz.Dr. Kasım Bozgeyik** Faculty of Maritime Studies Wednesday / 09:00 – 12:00 +90 (392) 650 26 00 / 4060 kasim.bozgeyik@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides comprehensive knowledge and practical skills in maritime first aid and medical care. It covers the fundamentals of human anatomy, common illnesses, and the use of medicines in a maritime context, with a focus on effective communication in medical emergencies. Students will learn to apply first aid techniques in cases of injury, illness, poisoning, burns, fractures, and environmental effects, as well as to provide extended medical care on board until professional assistance becomes available. The course also introduces international medical references such as the International Medical Guide for Ships (IMGS), the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG), and the medical pages of the International Code of Signals. Emphasis is placed on the prevention of diseases, maintaining hygiene on board, record-keeping, and compliance with international maritime medical regulations. Practical skills, including patient examination, wound treatment, suturing, bandaging, pharmacology, sterilization, and radio-medical communication, are developed to prepare students for real-life medical emergencies at sea. The course will be conducted in accordance with the IMO Model Courses 1.14, and 1.15, as well as the national regulation “Egitim Sinav Yonergesi 2025” of the Turkish Republic. Successful students will obtain mandatory STCW certificates of (1); Medical First Aid, (2); Medical Care.
Course Aims and Objectives	The primary aim of this course is to equip students with the essential knowledge, skills, and competencies necessary to deliver effective first aid and medical care on board ships, in accordance with international maritime standards and guidelines. The course prepares students to respond appropriately to medical emergencies, manage injuries and illnesses, and apply preventive healthcare measures in maritime environments. • Comprehend the fundamental framework and roles of the human body concerning first aid and medical treatment. • Communicate effectively in English during medical emergencies, utilizing international codes, guides, and telemedical support. • Identify and respond to common injuries, such as fractures, burns, wounds, and spinal trauma, with proper first aid techniques. • Ensure the application of appropriate procedures during life-threatening emergencies, including cardiopulmonary resuscitation (CPR), drowning incidents, and asphyxia cases. • Utilize the Medical First Aid Guide (MFAG) and other international medical references for handling hazardous materials and poisoning cases. • Provide medical care for both acute and chronic medical conditions, including infectious and tropical diseases. • Deliver specialized care for patients with gynecological, obstetric, dental, and mental health conditions on board. • Implement preventive health measures, including hygiene, vaccination, disinfection, and environmental control on ships. • Maintain precise medical records in accordance with international and national maritime regulations.

	• Cooperate effectively with external medical services, including radio medical advice, medical evacuation, and port health authorities.
Course Learning Outcomes	**LO1**: Describe the structure and functions of the human body that are important for first aid and medical care. **LO2**: Demonstrate effective communication in English during medical emergencies by employing standard medical terminology, adhering to the International Code of Signals, and utilizing telemedical procedures. **LO3**: Identify and assess symptoms associated with common injuries and illnesses, such as burns, fractures, spinal injuries, bleeding, and shock. **LO4**: Carry out fundamental first aid procedures, such as cardiopulmonary resuscitation (CPR), wound management through dressing and bandaging, immobilization of fractures, and patient transportation methodologies. **LO5**: Implement suitable medical interventions in instances of poisoning, hazardous material exposure, and other onboard health hazards in accordance with the Medical First Aid Guide (MFAG). **LO6**: Oversee patient care onboard for both acute and chronic medical conditions, including tropical, infectious, and sexually transmitted diseases. **LO7**: Provide emergency medical assistance for exceptional cases, including pregnancy, childbirth, dental emergencies, and psychological conditions. **LO8**: Implement preventive health and hygiene measures, including vaccination, disinfection, pest control, and environmental monitoring on board. **LO9**: Maintain accurate medical records and documentation in compliance with international and national maritime medical regulations. **LO10**: Collaborate with external medical services for radio medical advice, medical evacuation, and coordination with port health authorities.

Content of the Course

Week	*Subject*
1	**Introduction to Maritime First Aid and Medical Communication** Terminology and related maritime English terms Overview of medical communication in English Anatomy of the human body and basic terminology
2	**Diseases, Medicines, and Medical Communication at Sea** Terminology and related maritime English terms Common illnesses and medications Communication procedures in medical emergencies
3	**International Medical Documentation and Guides** Terminology and related maritime English terms International Code of Signals (Medical Pages) International Medical Guide for Ships (IMGS) and related publications
4	**Fundamentals of First Aid on Board** Terminology and related maritime English terms Immediate first aid in case of accident or illness Shipboard first aid kit: content and usage
5	**Anatomy, Physiology, and Toxic Hazards** Terminology and related maritime English terms Structure and functions of the human body Use of MFAG (Medical First Aid Guide for Accidents Involving Dangerous Goods) Toxic hazards on board
6	**Patient Examination and Emergency Scenarios** Terminology and related maritime English terms Examination of casualties Spinal injuries, burns, scalds, effects of heat and cold
7	**Musculoskeletal and Respiratory Emergencies** Terminology and related maritime English terms Fractures, dislocations, muscle injuries Heart attack, drowning, asphyxia
8	**Pharmacology and Sterilization in Shipboard Medical Care** Terminology and related maritime English terms Principles of pharmacology Sterilization and infection control
9	**Medical Care on Board – Trauma and Injuries** Terminology and related maritime English terms Head and spinal injuries ENT and eye injuries External and internal bleeding Wound management and infection prevention
10	**Medical Care on Board – Trauma and Injuries** Terminology and related maritime English terms Head and spinal injuries ENT and eye injuries External and internal bleeding Wound management and infection prevention
11	**Medical Care on Board – Clinical Cases**

	Terminology and related maritime English terms Burns, cold injuries, fractures, and acute abdominal diseases Pain management, suturing, and bandaging techniques Minor surgical treatments
12	**Hygiene, Sanitation, and Preventive Medicine** Terminology and related maritime English terms Hygiene practices on board Disinfection, fumigation, rat control Vaccination and disease prevention
13	**Records, Regulations, and External Assistance** Terminology and related maritime English terms Medical record-keeping International and national maritime medical regulations External medical assistance and coordination Radio medical advice and its application
14	**Records, Regulations, and External Assistance** Terminology and related maritime English terms Medical record-keeping International and national maritime medical regulations External medical assistance and coordination Emergency evacuation and transportation of the patient with helicopters or any other vehicles
15	**Review, Case Studies, and Final Assessment** Integrated medical scenarios Case study discussions (injuries, diseases, evacuations) Course wrap-up and final evaluation

Methods and Techniques used in the Course

Lectures & Multimedia Presentations – Theoretical concepts related to anatomy, medical conditions, and first aid procedures are taught with visual aids, slides, and videos.

Classroom Discussions & Case Studies – Students analyze real-life maritime medical incidents to enhance problem-solving and decision-making skills.

Demonstrations & Practical Exercises – First aid techniques such as CPR, bandaging, fracture immobilization, and patient transport are demonstrated and practiced in a controlled environment.

Simulation-Based Training – Use of medical manikins, emergency kits, and shipboard scenarios to simulate accidents, hazardous material exposure, and medical emergencies at sea.

Role-Playing & Communication Drills – Students practice radio medical advice, use of International Code of Signals, and medical communication in English.

Group Work & Peer Learning – Collaborative activities to foster teamwork in providing first aid and patient care on board.

Use of Training Manuals & Guidelines – Application of the *Medical First Aid Guide (MFAG)*, *International Medical Guide for Ships (IMGS)*, and national maritime health publications.

Laboratory & Hands-on Training – Practice of sterilization, suturing, wound dressing, and use of medical equipment.

Assessment-Oriented Activities – Quizzes, oral questioning, and scenario-based evaluations to reinforce learning outcomes.

Sample Questions

Multiple Choice Questions (MCQs)

- Which of the following is the primary purpose of the *Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG)*?

  a) To provide guidelines for patient nutrition at sea

  b) To assist in treating illnesses caused by poor hygiene

  c) To provide first aid instructions in cases of hazardous material exposure

  d) To guide the communication protocol with port authorities

- Which of the following is NOT a recommended step when treating a spinal injury on board?

  a) Keep the patient still and immobilize the spine

  b) Move the patient quickly to avoid further injury

  c) Use a rigid stretcher if available

  d) Avoid unnecessary movement of the head and neck

- What is the main purpose of sterilization in medical care on ships?

  a) Pain reduction

  b) Prevention of infection

  c) Faster wound healing

  d) Relief of stress for the patient

Short-Answer Questions

- List three essential items that should be found in a ship's first aid kit.
- Explain the difference between *first aid* and *medical care* on board.
- Identify two common tropical diseases that seafarers should be aware of and describe one method of prevention for each.

Materials Used in the Course

Textbooks and Official Guides

- Lecturer Notes, Related IMO Model Courses and STCW (Standards of Training, Certification, and Watchkeeping) manuals.
- International Medical Guide for Ships (IMGS), the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG), and the medical pages of the International Code of Signals.

Supplementary Resources

- Instructional videos
- Interactive simulations
- Standard shipboard first aid kits and medical chests.
- Mannequins for CPR and first aid practice.
- Splints, stretchers, bandages, dressings, sterilization, and immobilization devices.
- Simulation equipment for burns, fractures, and trauma care.

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.			✓		Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.			✓		Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.				✓	Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.			✓		Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.			✓		Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.				✓	Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.				✓	Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	**CLO10**
PO1	1	1	1	1	1	1	1	1	1	1
PO2	1	1	1	1	1	1	1	1	1	1
PO3	3	3	3	3	3	3	3	3	3	3
PO4	0	0	0	0	0	0	0	0	0	0
PO5	2	2	2	2	2	2	2	2	2	2
PO6	2	2	2	2	2	2	2	2	2	2
PO7	1	1	1	1	1	1	1	1	1	1
PO8	1	1	1	1	1	1	1	1	1	1
PO9	1	1	1	1	1	1	1	1	1	1
PO10	3	3	3	3	3	3	3	3	3	3
PO11	2	2	2	2	2	2	2	2	2	2
PO12	2	2	2	2	2	2	2	2	2	2

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
LO1	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO2	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO3	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO4	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO5	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO6	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO7	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO8	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO9	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO10	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**2**	**30**
Midterm Exam	**1**	**1**	**1**
Preparation for Midterm Exam	**1**	**5**	**5**
Final Exam	**1**	**1**	**1**
Preparation for Final Exam	**1**	**5**	**5**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	-	-	-
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	**15**	**1**	**15**
Assignment(s)/Homework/Class Works	-	-	-
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**87**
ECTS Credit			**3**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	1	10
Laboratory	-	-
Application	1	40
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Assignment(s)/Homework/Class Works	-	-
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	20
Final/Oral Exams	1	30
Total	**4**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check the instructor's web page frequently for the course announcements. • The University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Maritime Law and Conventions							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
LAW202	III	Spring	4	4	4	0	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Fundamental Legal Knowledge (Core)**	**Legal Method & Reasoning**	**Legal Skills (Research & Writing)**	**General Education**
				60%	20%	10%	10%
Course Venue and Time				E-6016 (14.30 - 17.20)			
Instructor information				**Lect. Halil Emre Gürler** Faculty of Law halilemre.gurler@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides a comprehensive introduction to maritime law, international conventions, and regulations governing the safety, operation, and management of ships at sea. It covers fundamental legal principles, the structure of national and international maritime legislation, and the legal responsibilities of shipowners, captains, and crew members. Students will gain knowledge of essential maritime conventions, including SOLAS, MARPOL, STCW, COLREG, UNCLOS, and related IMO codes, as well as conventions governing liability, compensation, search and rescue, and the transport of passengers and cargo. The course also emphasizes practical applications of maritime law, English terminology for ship documentation, and compliance with national and international regulations, providing students with the legal framework necessary for safe and effective maritime operations.
Course Aims and Objectives	The course aims to provide students with a thorough understanding of the legal framework governing maritime activities, including national and international maritime law, conventions, and regulations. It seeks to equip students with the knowledge and skills necessary to interpret, apply, and comply with maritime legal requirements, ensuring safe, lawful, and efficient ship operations. • Explain the fundamental principles, sources, and types of law, including international and national legal systems. • Define and classify maritime law, including its scope, purpose, and key components. • Understand the legal responsibilities and authorities of shipowners, captains, crew, and port authorities. • Identify and interpret essential international maritime conventions and regulations (e.g., SOLAS, MARPOL, STCW, COLREG, UNCLOS). • Apply maritime legal knowledge to practical situations, including ship documentation, safety compliance, and cargo operations. • Understand maritime English terminology for legal documents, vessel operations, and cargo management.

	• Recognize legal procedures related to maritime accidents, salvage, liability, and environmental protection. • Demonstrate awareness of national and international regulatory organizations, their roles, and enforcement mechanisms.
Course Learning Outcomes	**CLO1:** Define and explain the fundamental principles, sources, and types of law relevant to maritime operations. **CLO2:** Describe the scope and classification of maritime law, including national and international regulations. **CLO3:** Identify the legal responsibilities, authorities, and obligations of shipowners, captains, crew members, and port authorities. **CLO4:** Interpret and apply major international maritime conventions and protocols, such as SOLAS, MARPOL, STCW, COLREG, UNCLOS, and ILO Maritime Labour Convention. **CLO5:** Demonstrate the ability to read, understand, and use maritime English terminology in legal, operational, and cargo documentation. **CLO6:** Analyze maritime incidents, including collisions, salvage operations, and pollution events, and determine the legal implications and applicable conventions. **CLO7:** Evaluate compliance requirements for ship certification, documentation, and inspection processes under national and international law. **CLO8:** Apply knowledge of maritime law to practical scenarios, including cargo handling, vessel operations, and environmental protection measures. **CLO9:** Communicate effectively with stakeholders using internationally recognized maritime legal terminology.

Content of the Course

Week	*Subject*
1	**Introduction to Law** • Definition, sources, and types of law • Fundamental principles of law • Basic legal terminology • International law vs. national law: applications and sanctions
2	**Introduction to Maritime Law** • Definition and classification of maritime law • Key principles of international maritime law • Structure and sources of national maritime legislation
3	**Maritime Safety and Legal Requirements** • Laws on the protection of life and property at sea • Seafarers' employment rights and obligations (Maritime Labour Law) • Role, authority, and responsibilities of the ship captain
4	**Ship Documentation and Records** • Definition and types of ships and seaworthiness requirements • Mandatory onboard documents and records • Maritime accidents, collisions, and general average
5	**Maritime Administration and English Terminology** • National maritime organizations and regulations • International maritime organizations and conventions • Ship inspection and certification procedures • Insurance terminology and claims
6	**English for Ship and Cargo Documentation** • Deck documents and port documents • Cargo-related documentation in English
7	**Introduction to International Maritime Organization (IMO)** • IMO structure, committees, and functions • General Assembly, Council, Committees, and Secretariat
8	**SOLAS and Related Codes** • SOLAS 1974 and Protocols (1978, 1988) overview • Related codes: IBC, IMSBC, LSA, FSS, ISM, ISPS, IMDG, FTP, HSC, IGC, INF, BCH • IAMSAR Volume III and International Code of Signals
9	**MARPOL and Pollution Prevention Conventions** • MARPOL 1973 and Protocol 1997 • Annexes and record books: Oil Record, Garbage Record, Sulphur Content Monitoring, Ballast Water • Introduction to environmental protection at sea

10	**Key International Conventions** • UNCLOS 1982 (United Nations Convention on the Law of the Sea) • STCW 1978 and its amendments • COLREG 1972 (Collision Regulations) • Load Line Conventions (LL 1966, LL Protocol 1988) • Tonnage Measurement 1969
11	**Maritime Labour and Safety Codes** • ILO Maritime Labour Convention 2006 • IMO Codes of Safe Practice: CSS, BLU, TDC, OSV • FAL 1965: ship and port declarations, crew and passenger lists, dangerous goods
12	**Maritime Labour and Safety Codes** • ILO Maritime Labour Convention 2006 • IMO Codes of Safe Practice: CSS, BLU, TDC, OSV • FAL 1965: ship and port declarations, crew and passenger lists, dangerous goods
13	**Liability and Compensation Conventions** • CLC 1969 and CLC Protocol 1992 • FUND 1971 and FUND Protocol 2003 • HNS 1996 (Hazardous and Noxious Substances) • OPRC-HNS 2000 Protocol
14	**Liability and Compensation Conventions** • CLC 1969 and CLC Protocol 1992 • FUND 1971 and FUND Protocol 2003 • HNS 1996 (Hazardous and Noxious Substances) • OPRC-HNS 2000 Protocol
15	**Suppression of Unlawful Acts and Final Review** • SUA 1988 and Protocol 2005 (Suppression of Unlawful Acts Against Maritime Navigation) • Summary and integration of maritime conventions • Case studies and discussion of practical implications

Methods and Techniques used in the Course

Lectures and Presentations: Instructor-led theoretical sessions supported with visual materials and case examples.

Classroom Discussions: Interactive discussions to encourage critical thinking and deeper understanding of maritime legal issues.

Case Study Analysis: Examination of real-life maritime incidents, accidents, and disputes to apply relevant conventions and legal principles.

Document and Convention Review: Practical exercises on reading, interpreting, and analyzing international conventions, ship documents, and legal texts.

Problem-Solving Exercises: Scenario-based activities requiring application of maritime law to operational and legal problems.

Group Work and Presentations: Collaborative tasks where students prepare and present analyses of selected maritime law topics.

Simulation and Role-Play: Mock legal or operational exercises (e.g., collision responsibility, salvage agreement, or port authority inspection) to practice real-world applications.

Use of Maritime English Terminology: Emphasis on practicing and applying specialized English vocabulary in written and oral form.

Independent Study and Research: Assignments and projects requiring students to explore maritime legal resources, conventions, and academic literature.

Sample Questions

Short Answer / Definition Questions:

- Define the term *avarya (general average)* and explain its significance in maritime law.
- What are the main sources of maritime law at both national and international levels?
- Briefly describe the duties and responsibilities of a shipmaster under international maritime law.
- What is the primary purpose of the *International Convention on Load Lines (1966)*?
- List the essential ship certificates required to be carried on board under SOLAS.

Essay / Long Answer Questions:

- Discuss the role and structure of the **International Maritime Organization (IMO)** and explain how its conventions influence national maritime legislation.
- Explain the legal consequences of a collision at sea under the **COLREG 1972** Convention, including the allocation of liability.
- Analyze the scope and application of **MARPOL 73/78** with specific reference to oil pollution prevention measures.
- Evaluate the impact of the **STCW 1978 Convention** on the training and certification of seafarers.
- Compare and contrast the concepts of *salvage* and *towage* in maritime law.

Problem-Solving / Case Study Questions:

- A cargo ship suffers a fire at sea and jettisons part of its cargo to save the vessel. Discuss the legal implications for the shipowner and cargo owners under the principle of general average.
- A tanker collides with another vessel in international waters, causing oil pollution. Apply the relevant conventions (COLREG, CLC, MARPOL) to determine liability and possible compensation mechanisms.
- During a port inspection, authorities discover that a vessel's *Garbage Record Book* has not been properly maintained. Identify the applicable convention and discuss potential consequences for the ship and the master.
- A seafarer claims his employment contract has been violated under the Maritime Labour Convention (MLC 2006). Discuss the rights and remedies available to the seafarer.
- A ship is detained at a foreign port due to deficiencies in its safety equipment. Explain which international conventions and codes may apply to this case.

Materials Used in the Course

Primary References:

- International Maritime Organization (IMO) Conventions and Protocols:
  - SOLAS 1974 (International Convention for the Safety of Life at Sea)
  - MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships)
  - COLREG 1972 (Convention on the International Regulations for Preventing Collisions at Sea)
  - STCW 1978 (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers)
  - UNCLOS 1982 (United Nations Convention on the Law of the Sea)
  - LL 1966 (Load Line Convention) and 1988 Protocol
  - ILO Maritime Labour Convention, 2006 (MLC 2006)
  - Other relevant IMO codes (ISM, ISPS, IMDG, LSA, FSS, CSS, BLU, TDC, OSV Codes, etc.)

Secondary References:

- Özdemir, H. (Latest Edition). *Maritime Law: National and International Perspectives.*
- Berlingieri, F. *International Maritime Conventions.*
- Mukherjee, P.K., & Brownrigg, M. *Farthing on International Shipping.*
- Churchill, R.R., & Lowe, A.V. *The Law of the Sea.*
- Tetley, W. *Marine Cargo Claims.*

IMO Publications:

- International Code of Signals (INTERCO)
- IAMSAR Manual (Vol. III)
- Oil Record Book, Garbage Record Book, Ballast Water Record Book
- IMO Safety and Environmental Circulars

Legislation and Regulations:

- National Maritime Legislation (relevant laws, regulations, and decrees)
- Port State Control guidelines and procedures
- Case law and judicial precedents in maritime law

Supplementary Materials:

- Lecture slides and course notes prepared by the instructor
- Case studies and practical scenarios from real maritime incidents
- Legal documents such as bills of lading, charter parties, crew contracts, insurance policies
- Access to IMO's online databases and digital libraries

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.				✓	Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.				✓	Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.			✓		Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.				✓	Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.			✓		Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.			✓		Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	
PO1	2	2	1	1	2	1	3	3	1	
PO2	2	2	1	2	2	1	2	2	2	
PO3	2	3	2	1	2	1	1	3	3	
PO4	2	2	3	3	3	2	2	2	2	
PO5	1	2	2	2	3	3	2	2	1	
PO6	3	3	3	3	3	2	3	3	2	
PO7	2	2	2	2	1	2	3	3	2	
PO8	1	2	2	2	2	1	1	3	3	
PO9	2	2	2	3	2	2	2	3	3	
PO10	3	3	3	3	3	3	3	3	3	
PO11	2	2	2	2	3	3	3	2	2	
PO12	2	3	3	3	3	3	3	2	2	

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1 – Fundamental Principles of Maritime Law	Lecture, Multimedia Presentation, Case Studies	Quizzes, Assignments, Participation
CLO2 – Scope & Classification of Maritime Law	Lecture, Group Discussions, Tutorials	Quizzes, Written Assignments, Midterm Exam
CLO3 – Legal Responsibilities of Stakeholders	Case Studies, Role-Playing, Problem-Based Learning	Assignments, Observation, Practical Exercises
CLO4 – International Maritime Conventions	Lecture, Workshops, Simulation Exercises	Assignments, Midterm Exam, Practical Case Analysis
CLO5 – Maritime English Terminology in Legal Contexts	Lecture, Guided Practice, Document Analysis	Written Exercises, Quizzes, Assignments
CLO6 – Analysis of Maritime Incidents	Case Studies, Scenario-Based Learning, Group Work	Practical Case Reports, Assignments, Participation
CLO7 – Compliance & Certification Requirements	Lecture, Tutorials, Simulation	Assignments, Quizzes, Practical Exercises
CLO8 – Application of Maritime Law in Operations	Problem-Based Learning, Simulation, Workshops	Case Study Reports, Practical Exams, Assignments
CLO9 – Communication Using Maritime Legal Terminology	Role-Playing, Group Exercises, Presentations	Oral Presentations, Assignments, Observation

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**4**	**60**
Midterm Exam	**1**	**2**	**2**
Preparation for Midterm Exam	**1**	**15**	**15**
Final Exam	**1**	**2**	**2**
Preparation for Final Exam	**1**	**20**	**20**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	-	-	-
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**1**	**10**	**10**
Individual Reading / Research	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**139**
ECTS Credit			**4**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	15	10
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	1	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	50
Total	**4**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Dynamics							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
MEC204	II	Spring	3	5	3	0	0
Course type: Elective				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				20	20	20	40
Course Venue and Time				Wednesday 09.30-12.20			
Instructor information				**Chf. Eng. Volkan Varışlı** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4095 volkan.varisli@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	The **Dynamics** course provides an in-depth study of the motion of particles and rigid bodies under the influence of forces, emphasizing the fundamental principles of classical mechanics. Building upon the foundations of statics, this course explores kinematics and kinetics of motion in both linear and rotational systems. Students will examine velocity, acceleration, and force relationships through Newton's Laws of Motion, applying these to various physical systems. Key topics include linear and circular motion, work and energy principles, conservation of energy, impulse and momentum, and the analysis of collisions. Through theoretical lectures, graphical methods, and problem-solving exercises, students will develop the ability to model and analyze real-world dynamic systems. Practical examples from marine and mechanical engineering applications are integrated throughout the course to enhance comprehension and technical application. By the end of the course, students will possess the analytical and computational skills necessary to evaluate and predict the dynamic behavior of mechanical systems, preparing them for more advanced studies in mechanical, marine, and structural engineering.
Course Aims and Objectives	The primary aim of this course is to provide students with a comprehensive understanding of the fundamental laws governing the motion of particles and rigid bodies, enabling them to analyze and solve dynamic problems encountered in engineering systems. The course seeks to strengthen students' ability to connect theoretical mechanics with practical applications, particularly within marine and mechanical engineering contexts. **Objectives:** • To introduce the fundamental concepts of kinematics and kinetics of particles and rigid bodies. • To develop the ability to apply **Newton's Laws of Motion** to solve real-world engineering problems involving motion. • To analyze linear and rotational motion using mathematical and graphical approaches. • To explain and apply the **work-energy** and **impulse-momentum** principles in solving dynamic problems. • To investigate the concepts of **power**, **efficiency**, and **energy conservation** in moving systems. • To understand and analyze **collisions** and their effects on mechanical systems. • To provide the analytical framework necessary for the design and evaluation of dynamic components in marine, automotive, and mechanical systems.

	• To cultivate problem-solving skills and critical thinking through theoretical derivations, simulations, and practical case studies.
Course Learning Outcomes	**CLO1 – Fundamental Principles of Dynamics** Define and explain the fundamental concepts of dynamics, including kinematics and kinetics of particles and rigid bodies, and differentiate among linear, curvilinear, and rotational motion. **CLO2 – Kinematics of Motion** Describe and analyze the relationships among displacement, velocity, and acceleration; construct and interpret motion graphs for particles and rigid bodies in various types of motion. **CLO3 – Newton's Laws and Force–Motion Analysis** Apply Newton's Laws of Motion to solve engineering problems involving forces and motion in one, two, and three dimensions, using mathematical models for dynamic system behavior. **CLO4 – Work, Energy, and Power** Analyze and solve problems involving work, energy, and power, applying the principle of conservation of energy to practical mechanical and marine engineering systems. **CLO5 – Impulse, Momentum, and Impact** Evaluate impulse and momentum for particle and rigid body systems, and apply these principles to collision, impact, and transient dynamic scenarios. **CLO6 – Applied Dynamic Analysis & Professional Skills** Integrate theoretical, computational, and graphical methods to perform dynamic analyses; work effectively in teams to conduct simulations, interpret real-world dynamic phenomena, and communicate technical solutions in written and oral form.

Content of the Course

Week	*Subject*
1	Introduction, course overview
2	Velocity and acceleration, graphs
3	Linear motion
4	Linear motion
5	Circular motion
6	Second law of Newton's
7	Second law of Newton's
8	Mid-term Exam
9	Dynamics of a body
10	Work and Energy, Conservation of energy
11	Work and Energy, Conservation of energy
12	Impulse and Momentum
13	Impulse and Momentum
14	Collusion
15	Final Exams

Methods and Techniques Used in the Course

Lectures and Interactive Discussions:

Fundamental principles of dynamics are introduced through structured lectures supported by visual aids, derivations, and real-world examples. Interactive discussions encourage student participation and conceptual clarity.

Problem-Based Learning (PBL):

Students engage with complex, open-ended problems that require the application of Newton's laws, energy methods, and momentum principles to realistic engineering and marine systems.

Analytical and Computational Exercises:

Regular exercises emphasize the formulation and solution of dynamic equations using both analytical and numerical methods. MATLAB or equivalent computational tools may be utilized for simulation and analysis.

Graphical Analysis Workshops:

Students learn to interpret and construct velocity, acceleration, and motion graphs for linear and rotational systems, reinforcing their understanding of kinematics and kinetics relationships.

Case Studies and Engineering Applications:

Selected case studies from marine, mechanical, and aerospace engineering are analyzed to demonstrate the application of dynamic principles in real-world contexts such as ship motion, propulsion systems, and machinery vibration.

Laboratory Demonstrations and Virtual Simulations:

Where applicable, physical demonstrations and computer-based simulations are used to visualize dynamic responses and validate theoretical models.

Collaborative Learning and Group Projects:

Students work in teams to solve dynamic analysis problems, prepare reports, and present findings—enhancing communication, teamwork, and critical evaluation skills.

Continuous Assessment and Feedback:

Quizzes, midterm exams, and homework assignments are used to reinforce learning outcomes, while formative feedback helps students identify areas for improvement.

Sample Questions

Linear and Circular Motion

- A particle moves along a straight line with an acceleration given by $a = 6t - 2\text{m/s}^2$.
  (a) Determine its velocity and displacement as functions of time.
  (b) Find the total distance traveled between $t = 0\text{s}$ and $t = 4\text{s}$.

- A body moves in a circular path of radius 2 m with a constant angular acceleration of 4 rad/s².
  Determine the tangential and normal components of acceleration at the instant when the angular velocity reaches 6 rad/s.

Newton's Laws of Motion

- A block of mass 20 kg is pulled on a horizontal surface with a force of 100 N at an angle of 30° above the horizontal. If the coefficient of friction is 0.25, determine the acceleration of the block and the normal reaction force.

- A 50-kg mass is suspended by two cables making angles of 40° and 60° with the horizontal. Determine the tension in each cable using the equilibrium conditions.

Work and Energy Methods

- A 500-kg marine hatch cover is lifted vertically by a winch. If the winch applies a constant power of 5 kW, determine the velocity of the hatch after it has been raised 3 meters, assuming it started from rest.

- A 2000-kg ship model slides down an inclined plane of 20° with a coefficient of friction of 0.1. Determine the velocity of the model after sliding 5 meters using the work-energy theorem.

Impulse and Momentum

- A 3-kg projectile moving at 100 m/s strikes a stationary target and embeds itself in it. The combined mass after impact is 10 kg. Determine the final velocity immediately after impact and the percentage loss of kinetic energy.

- A 50,000-ton vessel is moving at 10 knots when its engines are suddenly reversed, producing a constant opposing thrust. Using the principle of impulse and momentum, estimate the time required to bring the ship to rest if the thrust force is known.

Collision and Impact

- Two smooth spheres, A (3 kg) and B (2 kg), collide head-on. Before impact, A moves with a velocity of 8 m/s and B with 4 m/s in the opposite direction. If the coefficient of restitution is 0.75, determine the velocities of both spheres after collision.

- A marine piston (mass = 5 kg) strikes a stationary cylinder head with an initial velocity of 2 m/s. If 60% of the kinetic energy is lost during the impact, calculate the rebound velocity of the piston.

Comprehensive Problem (Integration of Concepts)

- A flywheel of moment of inertia 40 kg\cdotpm^2 accelerates uniformly from rest to 300 rpm in 10 seconds.
  (a) Determine the angular acceleration.
  (b) Calculate the torque required to produce this motion.
  (c) Determine the total work done on the flywheel during acceleration.

Materials Used in the Course

Primary Textbooks and References

- Hibbeler, R. C. (2021). *Engineering Mechanics: Dynamics*, 15th Edition. Pearson Education.
- Meriam, J. L., Kraige, L. G., & Bolton, J. N. (2020). *Engineering Mechanics: Dynamics*, 9th Edition. Wiley.
- Beer, F. P., Johnston, E. R., & Cornwell, P. J. (2018). *Vector Mechanics for Engineers: Dynamics*, 12th Edition. McGraw-Hill Education.
- Bedford, A., & Fowler, W. (2015). *Engineering Mechanics: Dynamics*. Pearson.

These texts provide the theoretical background, mathematical formulations, and engineering examples necessary to develop a deep understanding of dynamics principles and their real-world applications in mechanical and marine systems.

Supplementary References

- Tongue, B. H. (2016). *Principles of Engineering Mechanics: Dynamics—The Analysis of Motion*. Springer.
- Kane, T. R., & Levinson, D. A. (1985). *Dynamics: Theory and Applications*. McGraw-Hill.
- Gere, J. M., & Goodno, B. J. (2013). *Mechanics of Materials and Dynamics Applications in Engineering*. Cengage Learning.
- Class notes, instructor-prepared summaries, and selected academic papers on marine and mechanical motion dynamics.

Laboratory and Simulation Resources

- **Computer-Aided Tools:**
  - MATLAB / Simulink for solving motion equations and simulating dynamic systems.
  - ANSYS Mechanical or SolidWorks Motion for dynamic modeling and stress visualization.
  - Tracker Video Analysis for motion analysis and experimental verification.
- **Laboratory Equipment (where applicable):**
  - Linear and rotational motion apparatus
  - Flywheel energy measurement setup
  - Pendulum motion devices
  - Force and acceleration sensors

Online and Digital Resources

- Access to digital learning platforms such as *Pearson Mastering Engineering*, *WileyPLUS*, or *McGraw-Hill Connect*.
- Multimedia materials including dynamic system simulations, recorded lectures, and interactive animations illustrating Newton's laws, energy transformations, and impact phenomena.
- Research databases (ScienceDirect, SpringerLink, IEEE Xplore) for current academic publications related to applied dynamics and marine engineering.

Additional Study Materials

- Lecture notes and weekly problem sets provided by the instructor.
- Sample quizzes and exam preparation booklets focusing on problem-solving strategies.
- Case studies on dynamic behavior in marine propulsion systems and mechanical linkages.

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of marine engineering principles, systems, and machinery operations, and effectively apply this knowledge to ensure safe, efficient, and sustainable vessel performance in compliance with IMO and STCW standards.				✓	Technical Knowledge & Applied Sciences
2	Apply advanced engineering design principles to develop, adapt, and optimize mechanical, electrical, and control systems onboard ships and in shore-based industrial contexts, integrating safety, cost-efficiency, and environmental considerations.				✓	Analytical & Computational Skills
3	Perform engineering watchkeeping duties and operational management with professional responsibility, situational awareness, and adherence to international maritime conventions and best practices.				✓	Sustainable Design & Safe Operating
4	Identify, formulate, and analyze complex engineering problems using appropriate theoretical, computational, and experimental techniques to derive sound, data-driven solutions in marine and related engineering domains.			✓		Research & Experimentation
5	Integrate principles of safety culture, risk assessment, and environmental protection into all engineering practices, promoting sustainable operations aligned with IMO conventions such as MARPOL and SOLAS.			✓		Innovation & Digital Competence
6	Employ advanced digital tools, diagnostic systems, and automation technologies for monitoring, control, and performance assessment of marine and industrial systems, in line with the requirements of the evolving maritime digitalization era.				✓	Regulatory Frameworks & Safety
7	Demonstrate competence in planning, executing, and managing engineering projects, including resource allocation, budgeting, and maintenance planning, while ensuring quality, safety, and compliance with regulatory frameworks.				✓	Teamwork & Leadership
8	Function effectively as a leader and member of multidisciplinary and multicultural teams, fostering collaboration, ethical conduct, and efficient communication in dynamic and often high-stress maritime environments.				✓	Project Management & Entrepreneurship
9	Communicate effectively in both written and oral forms with clarity, professionalism, and technical precision in English and other relevant languages within maritime and industrial contexts.			✓		Ethics & Professionalism
10	Adhere to the ethical and professional standards of the engineering and maritime professions, demonstrating accountability, integrity, and a commitment to continuous professional development and lifelong learning.				✓	Lifelong Learning & Adaptability
11	Evaluate and implement sustainable engineering practices and emerging green technologies to minimize the environmental footprint of marine and industrial operations.			✓		Communication Competence
12	Exhibit the flexibility and interdisciplinary mindset required to transfer marine engineering knowledge and skills to diverse sectors, contributing effectively to innovation and technological advancement beyond the maritime industry.			✓		Global Vision & Societal Impact

***0:** No Contribution **1:** Little Contribution **2:** Partial Contribution **3:** Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution						
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
PO1	1	2	2	2	3	2
PO2	2	3	3	3	3	3
PO3	1	2	2	2	2	2
PO4	1	2	2	2	2	2
PO5	3	1	1	1	1	2
PO6	1	1	1	1	1	2
PO7	1	1	1	1	1	2
PO8	1	1	1	1	1	2
PO9	1	1	1	1	1	1
PO10	0	2	2	2	2	3
PO11	2	1	1	1	1	2
PO12	3	1	1	1	1	2

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1 – Understand fundamental principles of dynamics, including kinematics and kinetics.	Lectures, Interactive Discussion, Concept Demonstrations	Quizzes, Midterm Exam
CLO2 – Analyze displacement, velocity, acceleration, and interpret motion graphs.	Lectures, Problem-Solving Sessions, Graphing Exercises	Assignments, Quizzes, Midterm Exam
CLO3 – Apply Newton's Laws to force–motion problems in 1D, 2D, and 3D.	Lectures, Worked Examples, Computational Tutorials	Midterm Exam, Final Exam
CLO4 – Solve work, energy, and power problems using energy principles.	Lectures, Workshops, Case Studies	Assignments, Midterm Exam, Final Exam
CLO5 – Evaluate impulse, momentum, collision, and impact scenarios.	Lectures, Simulation Exercises, Problem-Solving Workshops	Quizzes, Assignments, Final Exam
CLO6 – Perform applied dynamic analyses and present results effectively.	Group Projects, Presentations, Simulation-Based Learning	Project Report, Presentation, Final Exam

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**2**	**30**
Lectures	**15**	**3**	**45**
Midterm Exam	**1**	**3**	**3**
Preparation for Midterm Exam	**1**	**10**	**10**
Final Exam	**1**	**3**	**3**
Preparation for Final Exam	**1**	**10**	**10**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Case Studies / Critical Thinking	-	-	-
Project Writing	**2**	**10**	**20**
Group Work	-	-	-
In-class Discussion(s)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory / Practical Applications	-	-	-
Assignment(s)/Homework/Class Works	**4**	**10**	**40**
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**161**
ECTS Credit			**5**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	4	20
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	2	10
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	40
Total	**10**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Port and Terminal Operations							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
MMD204	II	Spring	3	3	3	0	0
Course type: Elective				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				-	-	-	100
Course Venue and Time				Wednesday / 13:30 – 16:20			
Instructor information				**Assist. Prof. Dr. Pınar Sharghi** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4120 pinar.sharghi@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides a comprehensive introduction to the operations, management, and functional roles of ports and terminals within the global maritime transport system. Students will explore the concepts of ports, terminals, and hinterlands, including their infrastructure, administration, and key stakeholders. The course covers the types of ports and terminals, components of terminal facilities, and daily operational processes, with particular emphasis on cargo handling techniques and equipment for containers, bulk, liquid, and Ro-Ro cargoes. Safety, efficiency, and environmental considerations in terminal operations are also addressed. In addition, students will gain an understanding of maritime markets, including liner and tramp shipping services, freight and chartering practices, and the preparation and use of shipping documentation. Topics such as charter party contracts, Incoterms, shipping agents, shipbrokers, and flags of convenience are integrated to provide a complete overview of the operational and commercial aspects of maritime logistics. Through lectures, case studies, practical exercises, and a term project, students will develop the theoretical knowledge and practical skills required for effective management and operations of ports and terminals, preparing them for professional careers in maritime transport, logistics, and port management.
Course Aims and Objectives	The primary aim of this course is to provide students with a thorough understanding of port and terminal operations within the global maritime transport system. The course focuses on developing both theoretical knowledge and practical skills related to port infrastructure, terminal management, cargo handling, and maritime markets, preparing students for professional roles in port operations, shipping logistics, and maritime management. • **Define ports and terminals** and explain their roles and functions within the maritime transport system. • **Differentiate between types of ports and terminals** and describe their key components. • **Explain port ownership and administration models**, and identify the main stakeholders in port operations. • **Describe port and terminal services**, including cargo handling, storage, and operational support.

	• **Understand hinterlands and their relationship with ports**, including types of hinterlands. • **Demonstrate knowledge of terminal operations** and cargo handling equipment for containers, bulk, liquid, and Ro-Ro cargoes. • **Explain the characteristics of maritime markets**, including liner and tramp shipping operations. • **Understand freight markets and chartering practices**, including voyage, time, and bareboat charters. • **Interpret and apply shipping documentation**, including charter party contracts, Bills of Lading, and Incoterms. • **Analyze port and terminal case studies**, integrating operational, commercial, and logistical aspects to propose practical solutions.
Course Learning Outcomes	**LO1:** Define and describe ports and terminals and explain their functions within maritime transport. **LO2:** Differentiate between types of ports and terminals and identify key components and infrastructure. **LO3:** Explain port ownership and administration models and identify key stakeholders. **LO4:** Describe port and terminal services, including cargo handling and operational processes. **LO5:** Analyze the concept of hinterlands and their impact on port operations. **LO6:** Demonstrate knowledge of terminal operations and cargo handling equipment for container, bulk, liquid, and Ro-Ro cargo. **LO7:** Explain maritime markets, including the characteristics and operational differences of liner and tramp shipping. **LO8:** Understand freight markets and chartering practices, including voyage, time, and bareboat charters. **LO9:** Interpret and apply shipping documentation, including Bills of Lading, Incoterms, and charter party contracts. **LO10:** Integrate theoretical knowledge with practical scenarios through case studies and project work.

Content of the Course

Week	*Subject*
1	**Introduction to Ports and Terminals** • What is a port? • Port system and port types (natural, artificial, deep-sea, coastal) • Roles and functions of ports
2	**Port Ownership and Administration** • Port ownership models: public, private, and public-private partnerships • Port administration and governance • Key stakeholders in port operations
3	**Port and Terminal Services** • Definition and classification of port services • Terminal services and operations overview • Key port users: shipping lines, cargo owners, agents
4	**Hinterland and Terminal Concepts** • Definition of hinterland and types (local, regional, global) • Relationship between ports and hinterlands • Terminal vs. port: definitions and distinctions
5	**Types of Terminals and Components** • Types of terminals: container, bulk, Ro-Ro, general cargo, tanker, multipurpose • Components of terminals according to type • Introduction to cargo handling equipment
6	**Port and Terminal Operations I** • Daily port and terminal operations • Vessel arrival, berthing, and departure procedures • Coordination with pilots, tugs, and port authorities
7	**Port and Terminal Operations II** • Terminal operations planning • Cargo handling processes • Safety, security, and environmental considerations
8	**Terminal Operations and Cargo Handling Equipment I** • Container handling operations: quay cranes, yard cranes, forklifts • Bulk cargo handling: grab cranes, conveyor systems, hoppers • General cargo operations
9	**Terminal Operations and Cargo Handling Equipment II** • Liquid cargo and tanker operations • Ro-Ro operations and specialized handling • Maintenance, safety, and efficiency in cargo handling **Introduction to Maritime Markets** • Overview of maritime trade markets

	• Liner service: characteristics, schedules, and route planning • Tramp shipping: operational differences from liner service
10	**Introduction to Maritime Markets** • Overview of maritime trade markets • Liner service: characteristics, schedules, and route planning • Tramp shipping: operational differences from liner service
11	**Freight and Chartering Overview** • Freight markets and price determination • Chartering concepts and types: voyage, time, and bareboat charters • Elements of charter party contracts
12	**Chartering Negotiations and Shipping Documents** • Offer and counter-offer methods • Common abbreviations and terminology in freight • Shipping documents: NOR, SOF, Time Sheet, Mate's Receipt, Manifest, Loading Order
13	**Trade Terms, Agents, and Brokers** • International trade terms: Incoterms 2020 • Roles and types of shipping agents • Shipbrokers and Flags of Convenience (FOC)
14	**Freight Conferences and Maritime Organizations** • Freight conferences: purpose, operation, and regulation • Overview of international maritime organizations (IMO, UNCTAD, ICS) • Case studies and application exercises
15	**Course Review and Final Exam** • Review of all key concepts: ports, terminals, cargo handling, chartering, and maritime markets • Discussion of case studies • Final examination

Methods and Techniques used in the Course

Lectures and Theoretical Instruction

- Instructor-led presentations introducing port and terminal concepts, types, infrastructure, and operations.
- Explanation of maritime markets, liner and tramp shipping, and chartering principles.
- Integration of real-world examples from ports and shipping companies.

Interactive Classroom Discussions

- Guided discussions on port ownership models, stakeholder roles, and operational challenges.
- Analysis of port and terminal services, cargo handling, and hinterland connectivity.
- Q&A sessions to reinforce learning and clarify complex concepts.

Case Studies and Scenario-Based Learning

- Examination of real-world port and terminal operations, including cargo handling, berthing, and storage.
- Analysis of maritime markets, liner and tramp operations, and freight contracts.
- Problem-solving exercises simulating operational, logistical, or commercial challenges.

Practical Demonstrations

- Use of diagrams, charts, and models to illustrate terminal components and cargo handling equipment.
- Demonstrations of container, bulk, liquid, and Ro-Ro cargo handling processes.
- Visualization of port layouts, terminal operations, and equipment deployment.

Multimedia and Digital Learning

- Instructional videos of port and terminal operations, cargo handling, and vessel movements.
- Interactive maps and virtual tours of major ports, terminals, and global shipping routes.
- Online resources for shipping documentation, chartering, and freight markets.

Group Activities and Collaborative Learning

- Team-based assignments analyzing terminal operations, port efficiency, or maritime trade scenarios.
- Peer discussions on freight markets, charter party contracts, and operational decisions.
- Collaborative problem-solving exercises simulating real-world port and terminal challenges.

Independent Learning

- Reading assignments from textbooks, industry reports, and online sources.
- Research tasks on port operations, shipping documentation, and maritime markets.
- Preparation for term projects and presentations.

Term Project and Presentations

- Individual or group projects analyzing a specific port, terminal, or shipping operation.
- Oral presentations to develop communication skills and practical understanding.
- Integration of theoretical knowledge with applied operational analysis.

Sample Questions

Multiple-Choice Questions (MCQs)

- Which of the following best describes a terminal in a port?

  a) A storage facility located inland only

  b) A dedicated area within a port where cargo handling and vessel operations take place

  c) A passenger cruise facility only

  d) A shipping company's administrative office

- Which type of terminal is primarily used for containerized cargo?

  a) Bulk terminal

  b) Ro-Ro terminal

  c) Container terminal

  d) Liquid terminal

- The hinterland of a port refers to:

  a) The navigable waters surrounding the port

  b) The inland area served by the port for cargo distribution

  c) The docks and berths within the port

  d) The passenger facilities at the port

- Which of the following is a key difference between liner and tramp shipping?

  a) Liner shipping operates on fixed schedules and routes, tramp shipping does not

  b) Tramp shipping always carries containers

  c) Liner shipping is exclusively for bulk cargo

  d) Tramp shipping follows pre-determined schedules

- A Bill of Lading serves as:

  a) A contract of carriage, receipt of goods, and document of title

  b) Only a cargo receipt

  c) Only a financial document

  d) Only a shipping schedule

Short Answer Questions

- Define a port and explain its main functions within maritime transport.
- List three types of terminals and describe their main characteristics.
- Explain the concept of hinterland and its importance for port operations.

- What are the main services provided by ports and terminals?
- Differentiate between liner and tramp shipping operations.

Long-Form / Essay Questions

- Discuss the roles of ports and terminals in global trade, emphasizing their infrastructure and operational functions.
- Explain the different port ownership and administration models and how they affect port efficiency.
- Analyze the operational differences between container, bulk, and Ro-Ro terminals.
- Describe the components and key equipment used in cargo handling operations at terminals.
- Evaluate the impact of chartering, freight markets, and maritime documentation on port operations and shipping efficiency.

Scenario-Based / Practical Questions

- You are assigned to plan operations at a new container terminal. Describe the key infrastructure, equipment, and workflow considerations.
- A bulk carrier arrives at a port with limited berthing capacity. How would terminal operations and cargo handling be managed efficiently?
- A port is located near a major industrial hinterland. Explain how this affects port throughput and service planning.
- Analyze a scenario where a shipping company switches from tramp service to liner service. What operational adjustments are needed at the port and terminal level?
- You are reviewing the shipping documentation for a vessel's cargo. Identify the key documents to verify and their purposes.

True/False Questions

- **T/F:** All ports and terminals are publicly owned.
- **T/F:** Ro-Ro terminals are designed to handle wheeled cargo such as vehicles.
- **T/F:** Liner shipping follows fixed schedules and designated routes.
- **T/F:** The hinterland of a port only includes the immediate waterfront area.
- **T/F:** Cargo handling equipment varies depending on the type of terminal and cargo.

Materials Used in the Course

Primary Textbooks

- **Notteboom, T. & Rodrigue, J.-P.** *Port Management and Operations*, 2nd Edition. Routledge, 2020.
- **Lam, J. S. L. & Yap, W. Y.** *Maritime Logistics: A Guide to Contemporary Shipping and Port Management*. Springer, 2019.
- **Brooks, M. R.** *The Shipping and Port Management Handbook*. Kogan Page, 2018.

Recommended References

- **UNCTAD (United Nations Conference on Trade and Development)** – *Review of Maritime Transport*, Annual Reports.
- **Stopford, M.** *Maritime Economics*, 4th Edition. Routledge, 2020.
- **Notteboom, T.** *Container Terminals and Port Operations*. Routledge, 2016.
- **International Maritime Organization (IMO)** – Port and Terminal Safety Guidelines, ISPS Code.
- **Port Authorities Publications** – Operational manuals, annual reports, and port statistics from major global ports (e.g., Rotterdam, Singapore, Hamburg).

Supplementary Learning Materials

- Online shipping and port databases (e.g., MarineTraffic, IHS Markit)
- Instructional videos on terminal operations and cargo handling equipment
- Case studies on container, bulk, liquid, and Ro-Ro terminal operations

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate fundamental knowledge of maritime business, shipping operations, port management, and international logistics.				✓	Maritime Business & Operations
2	Apply principles of management, economics, and finance to ship operations, chartering, brokerage, and maritime organizational decision-making.				✓	Maritime Economics & Management
3	Understand and interpret international maritime law, conventions, and trade regulations including SOLAS, MARPOL, UNCLOS, and INCOTERMS.				✓	Maritime Law & Policy
4	Plan and manage port and terminal operations efficiently, considering cargo handling systems, port logistics, and intermodal transport networks.				✓	Port & Terminal Operations Management
5	Employ digital tools and data-driven approaches in ship management, fleet performance monitoring, and maritime logistics systems.				✓	Digital Maritime Operations
6	Integrate sustainability, environmental protection, and decarbonization principles into maritime and logistics operations in line with IMO GHG strategy.			✓		Sustainability & Green Shipping
7	Demonstrate competence in maritime risk assessment, safety management systems (ISM Code), and crisis response in ship and shore-based contexts.			✓		Safety & Risk Management
8	Exhibit leadership, teamwork, and communication skills necessary for multicultural and interdisciplinary maritime organizations.				✓	Leadership & Intercultural Communication
9	Apply marketing, logistics, and supply chain strategies to global shipping and maritime transport sectors.				✓	Global Logistics & Supply Chain Management
10	Prepare and analyze charter parties, bills of lading, and other shipping documents while managing cargo claims and marine insurance issues.				✓	Maritime Documentation & Insurance
11	Utilize effective business English and Maritime English for negotiation, correspondence, and documentation within international maritime contexts.			✓		Maritime Communication & Professional English
12	Demonstrate ethical awareness, corporate responsibility, and adherence to international professional standards in maritime and logistics management.			✓		Ethics & Corporate Responsibility
13	Develop research skills and analytical thinking to identify, evaluate, and solve complex problems in maritime transport and logistics systems.			✓		Analytical Thinking & Research Skills
14	Adapt to innovations such as digitalization, automation, and smart shipping technologies through continuous professional development.				✓	Innovation & Lifelong Learning
15	Apply entrepreneurship and strategic management principles to establish or develop maritime-related enterprises in a competitive global environment.			✓		Entrepreneurship & Strategic Management

***0:** No Contribution **1:** Little Contribution **2:** Partial Contribution **3:** Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
	LO1	**LO2**	**LO3**	**LO4**	**LO5**	**LO6**	**LO7**	**LO8**	**LO9**	**L10**
PO1	3	3	2	2	2	1	3	2	2	2
PO2	3	3	3	2	2	1	2	1	2	1
PO3	2	3	1	3	3	2	1	3	1	1
PO4	2	2	1	2	3	3	2	2	2	2
PO5	1	2	2	1	1	2	2	2	3	3
PO6	1	2	1	2	1	1	2	3	2	2
PO7	1	1	1	1	1	3	2	2	3	3
PO8	1	1	3	1	1	1	2	1	2	1
PO9	1	1	2	1	1	1	1	1	2	2
PO10	2	2	1	2	3	3	2	2	2	2
PO11	1	2	2	1	1	2	2	2	3	3
PO12	1	2	1	2	1	1	2	3	2	2
PO13	3	3	3	2	2	1	2	1	2	1
PO14	2	3	1	3	3	2	1	3	2	2
PO15	1	2	1	2	2	3	2	2	3	3

Course Learning Outcomes/ Evaluation Method		
Course Learning Outcomes (CLOs)	**Teaching Method**	**Assessment Method**
LO1 Define and describe ports and terminals and explain their functions within maritime transport.	Lectures, diagrams, case studies	Quizzes, short-answer questions, class participation
LO2 Differentiate between types of ports and terminals and identify key components and infrastructure.	Lectures, multimedia presentations, practical demonstrations	Written assignments, quizzes, practical exercises
LO3 Explain port ownership and administration models and identify key stakeholders.	Lectures, group discussions, case studies	Short essays, class participation, quizzes
LO4 Describe port and terminal services, including cargo handling and operational processes.	Lectures, case studies, demonstrations	Practical assignments, written exams, scenario-based exercises
LO5 Analyze the concept of hinterlands and their impact on port operations.	Lectures, interactive maps, discussions	Short-answer questions, assignments, quizzes
LO6 Demonstrate knowledge of terminal operations and cargo handling equipment for containers, bulk, liquid, and Ro-Ro cargo.	Demonstrations, videos, practical exercises	Practical evaluation, observation, project work
LO7 Explain maritime markets, including the characteristics and operational differences of liner and tramp shipping.	Lectures, case studies, group discussions	Quizzes, written assignments, scenario analysis
LO8 Understand freight markets and chartering practices, including voyage, time, and bareboat charters.	Lectures, case studies, simulations	Written assignments, short essays, practical exercises
LO9 Interpret and apply shipping documentation, including Bills of Lading, Incoterms, and charter party contracts.	Lectures, demonstrations, document analysis	Written exams, practical exercises, scenario-based assessments
LO10 Integrate theoretical knowledge with practical scenarios through case studies and project work.	Term project, case studies, group work	Project reports, oral presentations, performance evaluation

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	-	-	-
Lectures	**15**	**3**	**45**
Midterm Exam	**1**	**2**	**2**
Preparation for Midterm Exam	**1**	**15**	**15**
Final Exam	**1**	**2**	**2**
Preparation for Final Exam	**1**	**15**	**15**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	-	-	-
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**1**	**15**	**15**
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**109**
ECTS Credit			**3**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	15	10
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	1	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	50
Total	**4**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Numerical Analysis for Engineers							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
MTH301	II	Spring	3	5	3	0	0
Course type: Elective				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				20	20	20	40
Course Venue and Time				Wednesday 09.30-12.20			
Instructor information				**Chf. Eng. Volkan Varışlı** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4095 volkan.varisli@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	The course **Numerical Analysis for Engineers** provides students with a comprehensive understanding of numerical methods and their application in solving engineering problems. The course begins with methods for solving nonlinear equations, including bracketing methods such as the **Bisection** and **False Position** methods, as well as open methods like **Fixed-Point Iteration**, **Newton-Raphson**, and **Secant** methods. Emphasis is placed on convergence criteria, error analysis, and practical implementation for engineering applications. The course then addresses methods for solving linear systems, focusing on both direct and iterative techniques, including **Jacobi** and **Gauss-Seidel** methods. Students learn to assess the efficiency and stability of these methods when applied to engineering problems. In the latter part of the course, students explore **interpolation and polynomial approximation** techniques, including **Maclaurin and Taylor series expansions**, and **curve fitting** methods to model experimental or discrete data. The course also covers **numerical differentiation and integration**, providing tools to approximate derivatives and integrals when analytical solutions are difficult or impossible. Through a combination of theoretical discussions, practical examples, and computational exercises, students develop the ability to implement numerical methods effectively in engineering contexts, preparing them for advanced analysis and simulation tasks in their respective fields.
Course Aims and Objectives	The aim of this course is to equip engineering students with the knowledge and practical skills required to solve mathematical problems numerically when analytical solutions are difficult or impossible. Students will gain a solid understanding of the fundamental principles of numerical methods and their application in engineering analysis, problem-solving, and modeling. The course emphasizes both the theoretical foundations and computational implementation of numerical techniques to ensure students can apply these methods to real-world engineering scenarios. • Understand the principles of numerical methods and the role of approximations in engineering problem-solving. • Apply various techniques to solve nonlinear equations, including bisection, false position, fixed-point iteration, Newton-Raphson, and secant methods. • Solve systems of linear equations using both direct and iterative methods, including Jacobi and Gauss-Seidel techniques. • Implement interpolation and polynomial approximation methods for data fitting and function estimation. • Use numerical differentiation and integration to approximate derivatives and integrals of engineering functions.

	• Analyze the convergence, stability, and error propagation of numerical methods. • Apply numerical analysis techniques using computational tools to solve practical engineering problems effectively.
Course Learning Outcomes	**CLO1** Identify, formulate, and classify engineering problems that require numerical solutions, recognizing when analytical methods are insufficient. **CLO2** Apply numerical techniques—including root-finding algorithms (Bisection, False Position, Fixed-Point, Newton–Raphson, Secant) and methods for solving linear systems (direct and iterative approaches such as Jacobi and Gauss-Seidel)—to obtain approximate solutions. **CLO3** Construct interpolation functions, perform polynomial approximations, and apply numerical differentiation and integration techniques to analyze engineering data and solve applied problems. **CLO4** Evaluate the accuracy, convergence, stability, and error behavior of numerical methods, comparing alternative approaches for suitability in engineering contexts. **CLO5** Use computational tools and programming/simulation software to implement numerical solutions, verify results, and solve practical engineering problems. **CLO6** Interpret numerical outputs, assess their physical and engineering relevance, and communicate findings to support informed technical decision-making.

Content of the Course

Week	*Subject*
1	Methods for Solving Nonlinear Problems Preliminary Discussion
2	Bisection Method, False Position Method
3	One-Point Iterative Method, Fixed-Point Method
4	Newton-Raphson Method, Secant Method
5	Methods for Solving Linear Problems
6	Midterm Exam
7	Iterative Method, Jacobi Method, Gauss-Seidel
8	Interpolation and Polynomial Approximation Maclaurin and Taylor Series
9	Curve Fitting
10	Curve Fitting
11	Numerical Differentiation
12	Numerical Differentiation
13	Numerical Integration
14	Numerical Integration
15	Final Exam

Methods and Techniques Used in the Course

Lectures and Conceptual Discussions

- Explanation of numerical methods principles and derivations.
- Discussion of applicability and limitations of each method.

Problem-Solving Sessions

- Step-by-step practice of solving nonlinear and linear equations.
- Hands-on exercises on interpolation, differentiation, and integration.

Computational Exercises

- Use of software tools (e.g., MATLAB, Python, or other engineering computational tools) to implement numerical algorithms.
- Programming iterative methods for linear systems and root-finding problems.

Case Studies and Engineering Applications

- Application of numerical methods to real-world engineering problems.
- Analysis of results and interpretation of numerical solutions.

Quizzes and Interactive Discussions

- In-class assessments to reinforce concepts and techniques.
- Peer discussions to compare solution strategies and error analysis.

Midterm and Final Exams

- Integration of theoretical knowledge and practical application of numerical methods.

Sample Questions

1. **Nonlinear Equations**
   - Solve the equation $f(x) = x^3 - 2x - 5 = 0$ using the Bisection Method. Perform two iterations and show all steps.
   - Apply the Newton-Raphson Method to find a root of $f(x) = \cos(x) - x$. Start with $x_0 = 0.5$ and perform three iterations.
2. **Linear Systems**
   - Solve the following system using the Jacobi Iterative Method up to two iterations:

$$\begin{cases} 4x + y - z = 7 \\ 2x - 3y + z = -4 \\ -x + 2y + 5z = 9 \end{cases}$$

   - Compare the solution obtained using Gauss-Seidel Method with the Jacobi Method for the same system.
3. **Interpolation and Polynomial Approximation**
   - Use Lagrange interpolation to find the value of a function at $x = 2.5$ given the points: $(1, 1), (2, 4), (3, 9)$.
   - Construct a second-degree polynomial approximation using Newton's Divided Difference method for the data: $(0, 1), (1, e), (2, e^2)$.
4. **Curve Fitting and Regression**
   - Fit a straight line $y = ax + b$ to the following data using the least-squares method:

x	1	2	3	4
y	2	4.1	6.05	8.2

5. **Numerical Differentiation and Integration**
   - Compute the derivative of $f(x) = \ln(x)$ at $x = 2$ using the central difference formula with $h = 0.1$.
   - Approximate the integral $\int_0^1 e^{-x^2} dx$ using the Trapezoidal Rule with $n = 4$.
6. **Series and Approximation**
   - Use the first three terms of the Maclaurin series to approximate $\sin(0.5)$.
   - Apply the Taylor series expansion of $f(x) = e^x$ about $x_0 = 0$ to estimate $f(0.2)$ using two terms.

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of marine engineering principles, systems, and machinery operations, and effectively apply this knowledge to ensure safe, efficient, and sustainable vessel performance in compliance with IMO and STCW standards.				✓	Technical Knowledge & Applied Sciences
2	Apply advanced engineering design principles to develop, adapt, and optimize mechanical, electrical, and control systems onboard ships and in shore-based industrial contexts, integrating safety, cost-efficiency, and environmental considerations.				✓	Analytical & Computational Skills
3	Perform engineering watchkeeping duties and operational management with professional responsibility, situational awareness, and adherence to international maritime conventions and best practices.				✓	Sustainable Design & Safe Operating
4	Identify, formulate, and analyze complex engineering problems using appropriate theoretical, computational, and experimental techniques to derive sound, data-driven solutions in marine and related engineering domains.			✓		Research & Experimentation
5	Integrate principles of safety culture, risk assessment, and environmental protection into all engineering practices, promoting sustainable operations aligned with IMO conventions such as MARPOL and SOLAS.			✓		Innovation & Digital Competence
6	Employ advanced digital tools, diagnostic systems, and automation technologies for monitoring, control, and performance assessment of marine and industrial systems, in line with the requirements of the evolving maritime digitalization era.				✓	Regulatory Frameworks & Safety
7	Demonstrate competence in planning, executing, and managing engineering projects, including resource allocation, budgeting, and maintenance planning, while ensuring quality, safety, and compliance with regulatory frameworks.				✓	Teamwork & Leadership
8	Function effectively as a leader and member of multidisciplinary and multicultural teams, fostering collaboration, ethical conduct, and efficient communication in dynamic and often high-stress maritime environments.				✓	Project Management & Entrepreneurship
9	Communicate effectively in both written and oral forms with clarity, professionalism, and technical precision in English and other relevant languages within maritime and industrial contexts.			✓		Ethics & Professionalism
10	Adhere to the ethical and professional standards of the engineering and maritime professions, demonstrating accountability, integrity, and a commitment to continuous professional development and lifelong learning.				✓	Lifelong Learning & Adaptability
11	Evaluate and implement sustainable engineering practices and emerging green technologies to minimize the environmental footprint of marine and industrial operations.			✓		Communication Competence
12	Exhibit the flexibility and interdisciplinary mindset required to transfer marine engineering knowledge and skills to diverse sectors, contributing effectively to innovation and technological advancement beyond the maritime industry.			✓		Global Vision & Societal Impact

***0:** No Contribution **1:** Little Contribution **2:** Partial Contribution **3:** Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution						
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
PO1	3	3	2	2	2	2
PO2	3	3	3	3	2	2
PO3	2	3	3	3	2	2
PO4	2	3	3	3	2	2
PO5	1	2	3	3	2	3
PO6	1	2	2	3	3	3
PO7	1	2	2	2	2	3
PO8	1	2	2	2	2	3
PO9	1	1	2	2	2	3
PO10	1	2	2	3	3	3
PO11	2	2	2	2	3	3
PO12	2	2	3	3	3	3

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1	Lecture, Problem-Solving Sessions, Demonstrations	Midterm Exam, Quizzes, Homework
CLO2	Lecture, Guided Practice, Computational Exercises	Midterm Exam, Quizzes, Homework
CLO3	Lecture, Problem-Based Learning, In-class Applications	Midterm Exam, Quizzes, Homework
CLO4	Lecture, Laboratory/Software Applications, Numerical Simulations	Midterm Exam, Homework, Project
CLO5	Lecture, Case Studies, Error/Convergence Analysis Workshops	Midterm Exam, Homework, Project
CLO6	Lecture, Computer-Based Applications, Project-Oriented Learning	Final Exam, Project, Homework

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	-	-	-
Lectures	**15**	**3**	**45**
Midterm Exam	**1**	**3**	**3**
Preparation for Midterm Exam	**1**	**10**	**10**
Final Exam	**1**	**3**	**3**
Preparation for Final Exam	**1**	**10**	**10**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Case Studies / Critical Thinking	-	-	-
Project Writing	**2**	**10**	**20**
Group Work	-	-	-
In-class Discussion(s)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory / Practical Applications	-	-	-
Assignment(s)/Homework/Class Works	**4**	**10**	**40**
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**131**
ECTS Credit			**5**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	4	20
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	2	10
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	40
Total	**10**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Navigation III							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
NAV202	II	Spring	4	5	3	2	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				60	-	-	40
Course Venue and Time				Wednesday 12.30-16.20			
Instructor information				**Cpt. Orhan Kamil Babaoğlu** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4040 orhankamil.babaoglu@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course aims to provide students with advanced knowledge and skills in maritime navigation, focusing on mathematical and celestial navigation techniques. Students will learn to plan and execute navigational routes, solve complex navigational problems, and use instruments such as the sextant, celestial charts, and nautical almanacs. The course also emphasizes determining ship position and correcting navigational instruments using celestial observations.
Course Aims and Objectives	• To deepen students' understanding of advanced navigation techniques. • To provide practical and theoretical skills in mathematical and celestial navigation. • To enable students to accurately determine ship position using both instruments and charts. • To develop problem-solving skills for navigational challenges at sea.
Course Learning Outcomes	**LO1:** Apply plane, traverse, Mercator, middle latitude, and great circle sailing techniques. **LO2:** Plan and execute composite navigational routes. **LO3:** Determine and draw navigational triangles for solution of current problems. **LO4:** plan passage in coastal waters and navigation in restricted visibility **LO5:** be able to calculate tides for a safe passage

Content of the Course

Week	*Subject*
1	**Introduction to Currents and Tidal Navigation** • Definition of currents and current sailing • Current triangle elements (Set, Drift, SOA, Track, Course, Speed) • Overview of global current systems **English Maritime Terminology (**Ship Registrations and Maritime Correspondence in English**)** • Ship's log and other logbooks • Record of cargo operations • Ship correspondence, protests • English required for keeping ship records and conducting correspondence
2	**Principles of Tides** • Tidal phenomenon and causes • Newton's law and the effects of the Moon and Sun • Spring and Neap Tides • Tidal streams and slack water
3	**Tidal Calculations and Tables** • Use of tidal tables to determine high and low water times • Calculating depth for a given time using tidal curves • Slack water periods and current speed calculations
4	**Current and Tidal Atlases** • Current charts and atlases • American and British tidal tables • Planning voyages with consideration of tides and tidal currents
5	**Current Corrections in Voyage Planning** • Influence of current and drift on ship's course • Course corrections against drift • Application to voyage planning
6	**Great Circle Sailing (I)** • Definition and characteristics of great circles • Advantages and challenges of great circle routes • Planning methods and calculations

7	**Great Circle Sailing (II)**
	• Great circle navigation methods:
	  ○ Gnomonic-Mercator method
	  ○ Lambert method
	  ○ Convergence angle method
	  ○ Spherical trigonometry solutions

8	**Midterm Exam / Practical Application**
9	**Introduction to Celestial Navigation** • Definition and principles of celestial navigation • Celestial sphere and terrestrial sphere • Basic terminology
10	**Celestial Coordinate Systems** • Celestial coordinate systems • Equatorial system: GHA, Dec, SHA, GHA (Aries) • Horizon system: Altitude and Azimuth
11	**Time in Celestial Navigation** • Definitions of time: GMT, ZT, LMT, ZD • Conversions and related formulas • Use of the Nautical Almanac
12	**Practical Use of the Nautical Almanac** • Almanac structure and information • Calculation of GHA and Dec with corrections

	• Determining twilight and meridian passage times
13	**Observations and Sextant Use** • Sextant principles, parts, and errors • Corrections for Sun, Moon, planets, and stars • Determining latitude from meridian altitude • Polaris observation for latitude
14	**Star Identification and Position Fixing** • Recognition of celestial bodies • Star-finding methods and star charts • Determination of intercepts and plotting lines of position • Astronomical fix on the chart

15	**Compass Error Determination with Celestial Navigation / Final Exam**
	• Methods of determining compass error by celestial observations:
	  ○ From meridian passage azimuth
	  ○ From Polaris azimuth
	  ○ From calculated altitude and azimuth
	• Final evaluation and project application

Methods and Techniques used in the Course

Lectures:

- Instructor-led theoretical explanations of mathematical and celestial navigation principles.
- Use of visual aids, diagrams, and charts to illustrate navigation concepts.

Practical Applications / Exercises:

- Hands-on plotting exercises on charts for plane, traverse, Mercator, middle latitude, and great circle sailing.
- Celestial observations practice using sextants and star charts.
- Position fixing using computed and observed altitudes.

Problem-Solving Sessions:

- Step-by-step guided calculations for navigation problems (distance, course, speed, drift, etc.).
- Analysis of spherical triangles and great circle computations.

Simulations:

- Simulated voyages using navigation software or chart plotting to reinforce theoretical knowledge.
- Application of tidal, current, and drift corrections in simulated navigation scenarios.

In-class Discussions and Case Studies:

- Discussion of real-life navigation challenges and scenarios.
- Analysis of historical or modern navigational case studies.

Assignments and Homework:

- Chart plotting exercises.
- Calculation exercises for celestial and mathematical navigation.

Examinations and Assessments:

- Midterm and final exams testing both theoretical knowledge and practical problem-solving skills.
- Evaluation of accuracy in chart plotting, celestial fixes, and navigational calculations.

Sample Questions

- A vessel sails on a course of 090^{o} for 120 nautical miles, then changes course to 180^{o} and sails for 50 nautical miles. Using Plane Sailing calculations, what is the final position of the vessel relative to its starting point?
- Which of the following statements about Great Circle Sailing is incorrect?
  a) It provides the shortest distance between two points.
  b) The course angle (or rhumb line) remains constant throughout the voyage.
  c) The starting and ending points, along with the Earth's center, lie on the same plane.
  d) It appears as a straight line on a gnomonic chart.
- Using Middle Latitude Sailing, calculate the change in longitude for a vessel traveling 10 nautical miles due east along the 40circ North parallel of latitude.
- What is the fundamental difference between GMT (Greenwich Mean Time), LMT (Local Mean Time), and Zone Time?
- In celestial navigation, what is the name of the triangle formed by the observer's position, the celestial body's position, and the celestial pole?
- Which of the following is **not** a type of error found in a sextant?
  a) Index Error
  b) Side Error
  c) Vertical Error
  d) Collimation Error
- What is the fundamental principle of determining latitude by observing a celestial body's meridian passage?
- On the celestial sphere, what is the angle between the observer's meridian and a celestial body's hour circle?
- What is used to determine the deviation of a gyro or magnetic compass by making celestial observations?
- Which sailing method is used to calculate the shortest distance between two points on the surface of the Earth?

Materials Used in the Course

Required Textbooks

- Command of the Defence Council, Admiralty Manual of Navigation, 10th Ed., Nautical Institute,London 2011.
- *Introduction to Maritime Science & Engineering*: A comprehensive text covering naval architecture, ship systems, and stability.
- *Principles of Celestial Navigation*: A specialized textbook focusing on celestial navigation theory, calculations, and practical application.

Reference Materials

- Güven Tuncer, Temel ve Yersel Navigasyon, Istanbul, 2005.
- Fethi Yağız, Seyir 1 and II, Akademi Denizcilik Yayınları ISBN: 9789759795627 2008
- The American Practical Navigation,Nathanile Bowdich,LLD,Bicentenial Edition(2002)
- COOLEN,E; Nicoll's Concise Guide to Navigation, Brown, son and Ferguson Publications, Glasgow,1987
- **The Nautical Almanac:** A fundamental reference for celestial navigation, providing the positions of celestial bodies for each day of the year.
- **Star Charts:** Atlases or charts for the identification and plotting of navigational stars.
- **Navigation Tables:** Essential for solving sight reduction problems (e.g., Bowditch's American Practical Navigator or similar publications).
- **Marine Engineering and Naval Architecture Handbooks:** Reference books for detailed information on ship design, structures, materials, and machinery.

Physical and Digital Tools

- **Sextant:** A functional sextant for practical celestial observations and sight-taking exercises.
- **Nautical Charts:** Practice charts for plotting positions and courses using various sailing methods (e.g., Mercator charts, gnomonic charts).
- **Navigation Calculators:** Scientific calculators capable of trigonometric and logarithmic functions.
- **Navigation Simulators:** Software for practicing navigation skills in a virtual environment.
- **CAD Software:** Programs like AutoCAD or similar for basic naval architecture drawings and structural design.

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.				✓	Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.				✓	Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.			✓		Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.				✓	Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.			✓		Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.			✓		Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
	LO1	**LO2**	**LO3**	**LO4**	**LO5**					
PO1	3	3	3	3	1					
PO2	2	2	2	2	1					
PO3	1	1	1	1	1					
PO4	3	3	3	3	2					
PO5	2	2	2	2	1					
PO6	2	2	2	2	1					
PO7	1	1	1	1	1					
PO8	2	2	2	2	1					
PO9	1	1	1	1	1					
PO10	2	2	1	1	1					
PO11	2	2	2	2	1					
PO12	2	2	2	2	1					

Course Learning Outcomes/ Evaluation Method		
Course Learning Outcomes (CLOs)	**Teaching Method**	**Assessment Method**
LO1	Lecture, Hands-on Practice, Question-Answer	Midterm Exam, Final Exam
LO2	Lecture, Hands-on Practice,	In-Class Exercises, Midterm Exam
LO3	Lecture, Hands-on Practice	In-Class Exercises
LO4	Lecture, Hands-on Practice	Assignments, Midterm Exam, Final Exam
LO5	Lecture, In-Class Exercises	Quizzes, Midterm Exam, Final Exam

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**5**	**75**
Midterm Exam	**1**	**5**	**5**
Preparation for Midterm Exam	**1**	**10**	**10**
Final Exam	**1**	**5**	**5**
Preparation for Final Exam	**1**	**15**	**15**
Presentation(s)	**-**	**-**	**-**
Preparation for Presentation(s)	**-**	**-**	**-**
Research for Project(s)/Essay(s)	**-**	**-**	**-**
Project Writing	**-**	**-**	**-**
Group Work	**-**	**-**	**-**
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	**2**	**1**	**2**
Preparation for Quiz(es)	**-**	**-**	**-**
Laboratory	**-**	**-**	**-**
Assignment(s)/Homework/Class Works	**2**	**1**	**2**
Micro-Teaching Sessions	**-**	**-**	**-**
Lesson Planning	**1**	**5**	**5**
Materials Adaptation	**-**	**-**	**-**
Material Development	**1**	**6**	**6**
Draft Preparation	**-**	**-**	**-**
Drawing	**-**	**-**	**-**
Essay Writing	**-**	**-**	**-**
Tutorial(s)	**-**	**-**	**-**
Portfolio Preparation	**1**	**2**	**2**
Portfolio Presentation	**-**	**-**	**-**
Total Workload			**157**
ECTS Credit			**5**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	15	10
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	2	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	1	10
Project	-	-
Quiz	2	10
Midterms/Oral Exams	1	30
Final/Oral Exams	1	30
Total	**6**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Electronic Aids to Navigation							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
NAV204	II	Spring	3	5	2	2	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				60	-	-	40
Course Venue and Time				Wednesday 12.30-16.20			
Instructor information				**Cpt. Caner Özbilgiç** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4040 caner.ozbilgic@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides students with a comprehensive understanding of modern electronic navigation systems. It covers the fundamental principles of electromagnetic wave propagation and their application in maritime navigation. Students will gain practical knowledge of various systems, including GPS and DGPS, as well as the structure, operation, and plotting techniques for Radar and ARPA. A significant portion of the course is dedicated to the ECDIS, focusing on its capabilities, limitations, and its role in safe navigation and situational awareness. The curriculum also includes an overview of bridge equipment, navigation records and logbooks, and essential voyage planning procedures, ensuring students are well-prepared to use these tools effectively and responsibly in a maritime environment.
Course Aims and Objectives	• **Comprehend Fundamental Principles:** Understand the principles of electromagnetic waves and their application in electronic navigation. • **Operate and Interpret Key Systems:** Effectively use and interpret data from essential electronic aids, including **GPS**, **DGPS**, **Radar**, and **ARPA**. • **Utilize ECDIS Proficiently:** Operate **ECDIS** (Electronic Chart Display and Information System) to ensure safe navigation, understanding its capabilities, limitations, and how to maintain situational awareness. • **Manage Bridge Equipment and Records:** Understand the function of various bridge control systems and manage navigation records and logbooks accurately. • **Plan Voyages Effectively:** Apply fundamental principles of **voyage planning** and navigate within **VTS (Vessel Traffic Services)** areas and procedures.
Course Learning Outcomes	**CLO1 – Fundamental Principles of Electromagnetic Waves** Understand and explain the basic principles of electromagnetic waves and their applications in modern electronic navigation systems. **CLO2 – Radar Operation** Demonstrate the ability to operate shipboard radar systems and interpret radar data accurately for safe navigation. **CLO3 – ARPA and Automatic Tracking** Operate Automatic Radar Plotting Aids (ARPA) and interpret tracking data to enhance situational awareness. **CLO4 – Satellite Navigation Systems** Utilize GPS, DGPS, and other satellite-based systems for accurate position fixing and navigation. **CLO5 – ECDIS Operation** Apply the Electronic Chart Display and Information System (ECDIS) to plan and execute voyages, understanding both its capabilities and limitations. **CLO6 – Data Analysis and Interpretation** Analyze and interpret navigation data, including radar plots, ECDIS alarms, and other electronic signals to ensure safe operations. **CLO7 – Bridge Equipment Management** Identify and operate standard bridge equipment while understanding their functions in navigation and ship handling.

	CLO8 – Voyage Planning and Execution Apply fundamental principles of voyage planning, considering route optimization, hazards, and VTS requirements. **CLO9 – Navigation Records and Documentation** Maintain accurate navigation records and logbooks, ensuring compliance with regulatory requirements. **CLO10 – Integrated Bridge Operations** Coordinate multiple bridge systems and tools to manage safe navigation and enhance situational awareness during watchkeeping.

Content of the Course

Week	*Subject*
1	**Introduction to Electronic Navigation** • Fundamentals of electromagnetic waves and their application to navigation • Overview of electronic position-finding systems
2	**Hyperbolic Navigation Systems** • Principles and applications of hyperbolic navigation • Transition to satellite-based navigation
3	**Satellite Navigation Systems** • Global Positioning System (GPS) and Differential GPS (DGPS) • Accuracy, errors, and correction methods
4	**Marine Radar Systems** • Structure, operation, and settings of radar • Basic principles of radar observation
5	**ARPA (Automatic Radar Plotting Aid)** • ARPA functionality and operational adjustments • Limitations and advantages of ARPA systems
6	**Radar Observation and Plotting Techniques** • Manual radar plotting methods (American and British approaches) • Maneuvering board applications for collision avoidance
7	**Automatic Radar Plotting and Tracking** • Automatic plotting techniques • Integration of radar and ARPA for enhanced safety
8	**Mid-Term Exam / Practical Assessment**
9	**ECDIS (Electronic Chart Display and Information System) Fundamentals** • Capabilities and limitations of ECDIS • Electronic chart data, accuracy, and display preferences
10	**ECDIS Operations and Safety Functions** • Safe monitoring and adjustment of navigational information • Alarm parameters, backup arrangements, and compliance with standards
11	**Integrated Navigation Systems** • Linking ECDIS with radar, AIS, and other sensors • Situational awareness, sensor integrity, and risk management
12	**Bridge Control and Steering Systems** • Bridge control systems overview • Steering gear and rudder equipment • Autopilot and emergency steering arrangements
13	**Bridge Record Keeping and Logbooks** • Types of navigational records and logbooks • Bridge logbook and other mandatory record-keeping practices • Automatic recording devices and digital systems
14	**Voyage Planning and VTS Procedures** • Principles of voyage planning • Vessel Traffic Service (VTS) areas and operational procedures • Application of electronic navigation tools in passage planning
15	**Final Exam / Project Presentation** • Comprehensive assessment covering electronic navigation systems, bridge equipment, and voyage planning

Methods and Techniques used in the Course

Theoretical Instruction

Lectures will introduce fundamental concepts, principles, and the operational theory behind various electronic navigation systems. Key topics, such as the physics of electromagnetic waves and the working principles of Radar, GPS, and ECDIS, will be delivered through presentations and in-class discussions.

Practical Application and Hands-on Training

A significant portion of the course is dedicated to practical skills development. Students will engage in:

- **Manual Plotting:** Using a maneuvering board to plot radar contacts and predict collision risks.
- **System Simulation:** Operating computer-based simulators to practice with **Radar**, **ARPA**, and **ECDIS**, enabling students to navigate in a controlled virtual environment.
- **Problem-Solving Exercises:** Applying theoretical knowledge to solve real-world navigation scenarios, including position fixing and voyage planning.

Assessment and Evaluation

Student learning will be evaluated through a combination of methods designed to test both theoretical knowledge and practical proficiency:

- **Midterm and Final Exams:** Comprehensive exams will assess the understanding of core concepts and theories.
- **Assignments and Exercises:** Regular homework and in-class assignments will reinforce learning and apply problem-solving techniques.
- **Performance-Based Assessments:** Practical tasks on simulators or during plotting exercises will be used to evaluate hands-on skills.

Sample Questions

- Explain the difference between *GPS* and *DGPS* in terms of accuracy, operational principles, and common applications in maritime navigation. Provide at least one real-life example where DGPS is preferred over GPS.
- A target vessel is detected by ARPA at a range of **8 NM** and bearing **045° relative** to own ship. After **12 minutes**, the target is at a range of **6 NM** and bearing **040° relative**.
- Determine the target's relative motion vector and assess if a risk of collision exists, using the radar plotting method.
- Suggest an appropriate avoiding action according to COLREGs.
- Describe three potential hazards of over-reliance on ECDIS and explain how each can be mitigated by proper bridge watchkeeping practices and integration with other navigational aids.
- List the essential entries that must be recorded in the *navigation logbook* during a voyage. Discuss why accurate and timely logkeeping is critical for both operational safety and legal compliance.
- You are assigned to prepare a voyage plan for a tanker passing through a VTS-controlled area. Identify the **four main stages of voyage planning** according to IMO guidelines, and explain what specific information related to VTS operations should be included in each stage.

Materials Used in the Course

- **Primary Textbooks and References**

  Bowditch, *American Practical Navigator*.

  IMO Model Course 1.07 – Radar, ARPA, Bridge Teamwork, and Search and Rescue.

  IMO Model Course 1.32 – ECDIS.

  Admiralty Manual of Navigation, Volume 1–2.

  IALA Guidelines on Vessel Traffic Services.

- **Electronic Navigation Equipment**

  GPS and DGPS receivers.

  ARPA-equipped radar systems.

  ECDIS (Electronic Chart Display and Information System) simulators.

  AIS (Automatic Identification System) interfaces.

  GMDSS communication equipment (for position verification and data input).

- **Charts and Publications**

  Official electronic navigational charts (ENCs).

  Raster navigational charts (RNCs).

  Admiralty List of Radio Signals (ALRS).

  Nautical Almanac (for celestial position verification).

- **Software and Simulation Tools**

  Radar and ARPA simulation software.

  ECDIS training modules with interactive route planning and monitoring functions.

  Maneuvering board plotting sheets.

- **Practical Training Materials**

  Sextant (for alternative position fixing demonstrations).

  Parallel rulers, dividers, and compasses for manual chart work.

  Sample logbooks and bridge record books.

- **Multimedia and Learning Resources**

  IMO and IALA training videos.

  Case studies of navigation incidents related to electronic systems.

  Manufacturer operation manuals for bridge equipment.

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.				✓	Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.				✓	Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.			✓		Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.				✓	Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.			✓		Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.			✓		Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	**CLO10**
PO1	3	3	3	3	3	3	2	3	2	2
PO2	2	2	2	3	2	2	2	2	3	2
PO3	3	2	2	3	3	3	2	3	2	3
PO4	2	2	2	2	3	2	3	2	2	2
PO5	3	3	3	3	3	3	2	3	3	3
PO6	2	2	2	2	2	2	2	2	2	2
PO7	1	1	1	1	2	1	2	2	1	2
PO8	1	1	1	1	1	1	1	1	1	1
PO9	1	1	1	2	1	1	1	2	1	2
PO10	2	2	2	2	2	2	2	2	2	3
PO11	1	1	1	1	2	1	1	1	1	2
PO12	1	1	1	1	1	1	1	1	1	2

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1 – Fundamental Principles	Lecture, Multimedia Presentation, Case Studies	Quizzes, Assignments, Midterm Exam
CLO2 – Operate Navigation Systems	Hands-on Lab, Simulation, Demonstration	Practical Exams, Lab Reports, Assignments
CLO3 – Apply ECDIS for Safe Navigation	Simulation Exercises, Group Projects, Practical Demonstration	Practical Exams, Project Reports, Assignments
CLO4 – Analyze and Interpret Data	Problem-Solving Sessions, Simulation, Case Studies	Assignments, Quizzes, Practical Exercises
CLO5 – Manage Bridge Operations	Role-Playing, Simulation, Scenario-Based Exercises	Observation, Practical Exams, Project Reports
CLO6 – Radar & ARPA Interpretation	Lab Exercises, Simulation, Demonstration	Practical Exams, Assignments, Lab Reports
CLO7 – GPS/DGPS & Satellite Systems	Hands-on Lab, Tutorials, Simulation	Lab Reports, Practical Exams, Quizzes
CLO8 – Navigation Decision-Making	Case Studies, Scenario-Based Learning, Group Exercises	Assignments, Practical Exams, Participation
CLO9 – VTS & Reporting Systems	Lecture, Simulation, Demonstration	Quizzes, Assignments, Practical Exercises
CLO10 – Integration of Navigation Skills	Scenario-Based Exercises, Bridge Simulation, Group Projects	Project Reports, Practical Exams, Assignments

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**4**	**60**
Midterm Exam	**1**	**2**	**2**
Preparation for Midterm Exam	**1**	**10**	**10**
Final Exam	**1**	**2**	**2**
Preparation for Final Exam	**1**	**10**	**10**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	-	-	-
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**1**	**20**	**20**
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**134**
ECTS Credit			**3**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	15	10
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	1	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	50
Total	**4**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Ship Construction							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
NRC202	II	Spring	3	3	3	0	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				20	40	40	-
Course Venue and Time				Friday / 09:30 – 11:20			
Instructor information				**Prof. Dr. Deniz Ünsalan** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4060 deniz.unsalan@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides students with fundamental knowledge of ship construction, stability, and heat transfer principles essential for marine engineering. The first part of the course focuses on ship geometry, hull structures, propulsion systems, and the fundamentals of transverse, longitudinal, dynamic, and damaged stability. Students will learn to analyze hydrostatic properties, stability curves, and the effects of loading conditions on vessel performance. The second part of the course introduces the concepts of heat transfer, including conduction, convection, and radiation. Special emphasis is placed on practical applications such as boundary layers, boiling and condensation processes, and heat exchange between surfaces. Through theoretical instruction, problem-solving, and applied case studies, the course aims to equip students with the technical background required for ship design, safe operation, and marine engineering problem-solving.
Course Aims and Objectives	The aim of this course is to provide students with a comprehensive understanding of ship construction, stability, and heat transfer principles that are fundamental to marine engineering. The course is designed to develop both theoretical knowledge and practical problem-solving skills necessary for ship design, safe operation, and engineering analysis. • Understand the fundamentals of ship geometry, hull form, and structural components. • Identify and explain propulsion systems, rudders, and related hydrodynamic effects. • Analyze ship stability in transverse, longitudinal, dynamic, and damaged conditions. • Interpret hydrostatic data, stability curves, and the effects of loading conditions on ship performance. • Gain knowledge of the principles of heat transfer, including conduction, convection, and radiation. • Apply analytical methods to solve steady-state and transient heat transfer problems in marine systems. • Relate theoretical knowledge to practical applications in shipbuilding, operation, and safety. • Develop critical thinking and problem-solving skills through case studies and applied exercises.

Course Learning Outcomes	**CLO1:** Analyze and describe ship geometry, hull forms, and structural components, including midship sections, deck camber, and form coefficients. **CLO2:** Explain the principles of ship propulsion systems, propeller types, cavitation, rudders, and their effects on ship maneuverability. **CLO3:** Calculate and evaluate transverse, longitudinal, and dynamic stability of ships under various loading conditions. **CLO4:** Assess damaged ship stability, including methods for determining drafts, trim, and weight distribution after flooding or structural damage. **CLO5:** Interpret hydrostatic curves, inclining experiment results, and stability criteria according to IMO regulations. **CLO6:** Apply principles of heat transfer—conduction, convection, and radiation—in marine engineering contexts. **CLO7:** Solve one-dimensional, radial, and multi-dimensional heat conduction problems, including transient and steady-state scenarios. **CLO8:** Evaluate hydraulic and thermal boundary layers and flow regimes using Reynolds number analysis. **CLO9:** Analyze heat transfer during condensation and boiling, and between opposing surfaces in marine systems. **CLO10:** Integrate theoretical knowledge with practical applications through problem-solving, case studies, and design exercises relevant to ship construction and marine engineering.

Content of the Course

Week	*Subject*
1	**Introduction to Ship Geometry** Dimensions, forms, and coefficient of forms
2	**Ship Lines and Plans** Body plan, sheer plan, half-breadth plan, midship section
3	**Tonnages** Gross, net, deadweight, and special tonnages; bow and stern forms
4	**Hull Structures and Structural Elements** Keel, bottom structures, and floors
5	**Framing System** Frames, beams, longitudinals, bulkheads, and pillars
6	**Structural Fittings** Shell plating, watertight bulkheads, tanks, sea chests, bilges, manholes, air pipes
7	**Propulsion Systems I** Propeller types, definitions, and cavitation phenomena
8	**Propulsion Systems II** Slip ratio, rudders and rudder types, twin-screw arrangements
9	**Transverse Stability** Displacement, draft, buoyancy, load lines, hydrostatic curves, and GM calculations
10	**Transverse Stability II** Initial stability, equilibrium conditions, inclining experiments, righting levers, Simpson's rule
11	**Dynamic Stability** IMO weather criteria, static and dynamic stability curves, free surface effects
12	**Trim and Longitudinal Stability** Effect of density changes, transfer problems, small and large loading/unloading operations
13	**Damaged Ship Stability** Loss of buoyancy, added weight and permeability methods, effects on stability and trim
14	**Ship Trim, Stability, and Stress Calculations** Displacement, draft survey, trim, GM, and longitudinal stress calculations
15	**Propeller and Rudder Effects** Fixed and controllable pitch propellers, single vs. twin-screw ships, rudder effects on maneuvering

Methods and Techniques used in the Course

Lectures:

- Theoretical presentations of ship construction principles, structural design, stability, and hull geometry.
- Use of diagrams, ship plans, and hydrostatic tables to illustrate key concepts.

Practical Exercises:

- Solving ship stability and hydrostatics problems.
- Calculation of displacement, trim, and stability parameters.
- Analysis of damaged ship stability scenarios.

Case Studies and Examples:

- Analysis of real ship construction cases to apply theoretical knowledge.
- Discussions on various hull forms, structural layouts, and stability challenges.

Group Work and Problem-Solving Sessions:

- Collaborative exercises to enhance analytical and decision-making skills.
- Application of IMO stability criteria in practical scenarios.

Simulation/Software Tools:

- Use of ship design and stability software for hydrostatics calculations and stability assessments.

In-class Discussions:

- Interactive discussions on best practices in ship construction and safety considerations.

Assignments/Homework:

- Individual tasks to reinforce theoretical knowledge and analytical skills.
- Preparation of reports and solutions for given ship stability or structural problems.

Quizzes and Assessments:

- Regular evaluation of students' understanding of key concepts.

Sample Questions

Hull Geometry and Form:

- Explain the difference between block coefficient (Cb), midship coefficient (Cm), and prismatic coefficient (Cp). How do these coefficients affect a ship's performance and stability?

Structural Components:

- Describe the function of bulkheads, frames, decks, and pontoons in a ship's hull. How do they contribute to the overall strength and watertight integrity of the vessel?

Hydrostatics and Stability:

- A ship has a displacement of 10,000 tons and a center of gravity at 6 m above the keel. Calculate the metacentric height (GM) if the transverse moment of inertia is 80,000 m^4 and the waterplane area is 1,500 m^2. Discuss the implications of the GM value for transverse stability.

Trim and Longitudinal Stability:

- A vessel undergoes partial loading: 200 tons are loaded at the bow and 150 tons at the stern. Calculate the resulting change in trim and draft if the ship's longitudinal center of flotation is at 50 m from the bow and the longitudinal moment to change trim 1 cm is 10 ton·m/cm.

Damaged Ship Stability:

- Explain the procedures to assess the stability of a damaged ship according to IMO criteria. How do added weights, flooding, or compartment damage affect draft, trim, and overall stability?

Materials Used in the Course

Textbooks and Reference Books:

- "Ship Construction" – David J. Eyres & George J. Bruce (Latest Edition)
- "Principles of Naval Architecture" – Volume II: Stability, Strength, and Design (SNAME)
- "Ship Hydrostatics and Stability" – Adrian Biran
- "Ship Design and Construction" – American Bureau of Shipping (ABS) Guide

Supplementary Reading:

- Research papers on ship hull optimization and stability
- IMO guidelines on damaged ship stability and safety regulations
- Case studies of recent shipbuilding projects

Software / Simulation Tools:

- Hydrostatic and stability calculation software (e.g., Maxsurf, NAPA)
- Structural analysis programs for ships (e.g., ANSYS, RhinoShip)
- Spreadsheet tools for hydrostatic and weight calculations

Other Materials:

- Ship lines plans, cross-sections, and midship plans
- Drafting and design templates
- Laboratory models or scaled ship sections for demonstration

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.				✓	Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.				✓	Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.			✓		Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.				✓	Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.			✓		Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.			✓		Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	**CLO10**
PO1	3	3	3	3	3	2	2	2	2	3
PO2	2	2	2	2	2	3	3	2	2	3
PO3	2	2	3	3	3	2	3	2	2	3
PO4	1	1	2	2	2	3	2	2	2	2
PO5	3	3	3	2	3	3	3	3	3	3
PO6	2	2	2	2	2	2	2	2	2	2
PO7	1	1	1	1	1	1	1	1	1	1
PO8	1	1	1	1	1	1	1	1	1	1
PO9	1	1	1	1	1	1	1	1	1	1
PO10	1	1	2	2	2	2	2	2	2	2
PO11	1	1	1	1	1	1	1	1	1	2
PO12	1	1	1	1	1	1	1	1	1	2

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1	Lecture, Multimedia Presentation, Case Studies	Quizzes, Assignments, Midterm Exam
CLO2	Lecture, Demonstration, Problem-Solving Sessions	Quizzes, Assignments, Practical Exercises
CLO3	Lecture, Simulation Exercises, Case Studies	Assignments, Midterm Exam, Practical Exercises
CLO4	Lecture, Tutorials, Group Exercises	Lab Reports, Quizzes, Assignments
CLO5	Lecture, Bridge/Shipboard Simulations, Practical Exercises	Practical Exams, Lab Reports, Assignments
CLO6	Lecture, Tutorials, Problem-Based Learning	Quizzes, Assignments, Practical Exercises
CLO7	Role-Playing, Group Work, Simulation	Observation, Assignments, Practical Exams
CLO8	Problem-Based Learning, Case Studies, Simulation Exercises	Assignments, Midterm Exam, Practical Exercises
CLO9	Lecture, Discussions, Case Studies	Quizzes, Assignments, Participation
CLO10	Scenario-Based Exercises, Simulation, Group Projects	Project Reports, Practical Exams, Assignments

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**2**	**30**
Midterm Exam	**1**	**2**	**2**
Preparation for Midterm Exam	**1**	**4**	**4**
Final Exam	**1**	**2**	**2**
Preparation for Final Exam	**1**	**4**	**4**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	**1**	**5**	**5**
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**2**	**5**	**10**
Individual Reading / Research	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**87**
ECTS Credit			**3**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	2	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	1	10
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	50
Total	**5**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Maritime Safety IV							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
SAF202	II	Spring	3	3	2	2	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				30	-	-	70
Course Venue and Time				Wednesday 14.30-17.20			
Instructor information				**Cpt. Çağrı Deliceırmak** Faculty of Maritime Studies Wednesday / 09:00 – 12:00 +90 (392) 650 26 00 / 4060 cagri.deliceirmak@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	Maritime Safety IV provides advanced training in shipboard safety, emergency response, and crisis management for both crew and passengers. The course focuses on protective measures on passenger ships during maritime emergencies, fast rescue boat (FRB) operations, passenger and cargo safety, vessel stability, and effective use of safety equipment. Additionally, this course provides comprehensive training in collision, grounding, and evacuation procedures. Students will gain practical and theoretical knowledge to respond efficiently to emergencies on passenger ships, manage passengers in critical situations, operate lifesaving appliances, and uphold international maritime safety standards. The course will be conducted in accordance with the IMO Model Courses 1.24, 1.28, and 1.29, as well as the national regulation "Egitim Sinav Yonergesi 2025" of the Turkish Republic. Successful students will obtain mandatory STCW certificates of (1); Proficiency in Fast Rescue Boats, (2); Crowd Management, Passenger Safety, and Safety Training for Personnel Providing Direct Services to Passengers In Passenger Spaces, (3); Proficiency in Crisis Management and Human Behaviour Training, Including Passenger Safety, Cargo Safety, and Hull Integrity Training. The course emphasizes leadership, communication, and human behaviour management to ensure preparedness and safety in diverse maritime scenarios.
Course Aims and Objectives	The course aims to equip students with the advanced knowledge and practical skills necessary to ensure the safety of passengers, crew, and vessels in emergencies. It focuses on enhancing maritime safety awareness, improving emergency response capabilities, and fostering effective management of life-saving operations and safety equipment on board. • Comprehend and execute protocols for safeguarding passengers and crew members during maritime emergencies. • Acquire proficiency in the operation, launching, recovery, and management of fast rescue boats (FRBs) across diverse sea and weather conditions. • Oversee passenger evacuation procedures, manage crowd control, and ensure safety in accordance with international regulations. • Develop skills for effective communication, leadership, and human behavior management during crises.

	• Ensure proper handling and securing of cargo, maintenance of vessel stability, and management of hazardous materials. • Comprehend and implement protocols during emergencies, including collisions, groundings, beaching, and emergency evacuations. Conduct safety drills, risk assessments, and inspections to uphold shipboard safety and readiness.
Course Learning Outcomes	**LO1**: Demonstrate knowledge of maritime emergency response procedures for the protection of passengers and crew. **LO2**: Ensure the safe operation, launching, and recovery of Fast Rescue Boats (FRBs) across diverse sea and weather conditions. **LO3**: Implement crowd management, evacuation protocols, and passenger safety procedures, including aiding individuals with special needs. **LO4**: Utilize effective situational awareness, communication, and leadership skills to manage human behavior during onboard emergencies. **LO5**: Implement safe cargo handling, securing, stowage, and transfer techniques to maintain the stability of a passenger ship. **LO6**: Identify and mitigate risks associated with hazardous materials, dangerous goods, and other safety threats on passenger ships.

Content of the Course

Week	*Subject*
1	**Passenger Ship Safety – Crowd Management** Terminology and related maritime English terms Muster stations, assembly lists, and emergency instructions Role allocation and muster procedures Control in corridors, stairways, and escape routes Evacuation of disabled or special-needs passengers
2	**Passenger Ship Safety – Crowd Management** Terminology and related maritime English terms Instructions and management of passengers Panic prevention strategies Organizing evacuation, checks, and counting of evacuated people Safety checks on life jackets and passenger readiness
3	**Passenger Safety Training – Direct Service Personnel** Terminology and related maritime English terms Effective communication with passengers, the importance of English, and a common language Multilingual and non-verbal communication during emergencies Importance of multilingual emergency instructions Instructing and training passengers on the use of personal life-saving appliances Embarkation and disembarkation of disabled or special-needs passengers
4	**Crisis Management and Human Behaviour** Terminology and related maritime English terms Ship design, safety rules, and emergency plans Emergency organization, resource management, and leadership Behavioural responses in emergencies Controlling and managing stress and panic in emergencies Common passenger behaviour and responses in emergencies
5	**Passenger and Cargo Safety, Vessel Integrity** Terminology and related maritime English terms Loading, unloading, lifting, shifting, and securing cargo Handling of hazardous materials on Ro-Ro vessels Applying proper lashing methods to the vehicles Use of lashing equipment and compliance with safety regulations
6	**Passenger and Cargo Safety, Vessel Integrity** Terminology and related maritime English terms Stability, trim, and stress calculations on passenger and RORO ships Effects of ballast and fuel transfers Opening, closing, and securing vessel hatches, ramps, and doors Ventilation and monitoring the atmosphere in RORO vehicle decks Safe operations on RORO vessels during loading, unloading, and emergencies
7	**Fast Rescue Boats (FRBs)** Terminology and related maritime English terms

	Construction and types of FRBs Specifications and accessories of the FRBs Launching Appliances for the FRBs
8	**Fast Rescue Boats (FRBs)** Terminology and related maritime English terms Preparation and launching of the FRBs Safety measures and precautions during the launching and recovery of the FRBs Launching and operating the FRB in heavy seas
9	**Fast Rescue Boats (FRBs)** Terminology and related maritime English terms Navigational and operational characteristics of the FRBs Up-righting of a capsized FRB, self-righting FRBs Navigation and operation of the FRB in heavy seas
10	**Fast Rescue Boats (FRBs)** Terminology and related maritime English terms Equipment and accessories of the FRB Engine of the FRBs, starting and operating methods Search and rescue methods with the FRBs, and natural limitations
11	**Collision, Grounding, and Emergency Evacuation** Terminology and related maritime English terms Definitions and differences between grounding, stranding, and beaching Preparations for beaching Measures to be taken after grounding, stranding, and beaching
12	**Collision, Grounding, and Emergency Evacuation** Terminology and related maritime English terms Collision and collision management Measures to be taken after a collision Measures to be taken after a fire or explosion
13	**Collision, Grounding, and Emergency Evacuation** Terminology and related maritime English terms Damage control and ship rescue operations Steering failures and emergency steering Towing operations
14	**Collision, Grounding, and Emergency Evacuation** Terminology and related maritime English terms Emergency evacuation, abandoning ship Evacuation methods and techniques
15	**Course Review and Practical Exercises** FRB drills and emergency scenarios Passenger evacuation simulations Integration of shipboard safety, cargo security, and crisis management

Methods and Techniques used in the Course

Lectures and Presentations: Delivery of theoretical knowledge on maritime safety regulations, emergency response, and passenger/cargo safety.

Case Studies and Scenario Analysis: Examination of real-life maritime incidents to develop problem-solving and decision-making skills.

Practical Training and Simulations: Hands-on practice with Fast Rescue Boats (FRBs), lifesaving appliances, and safety equipment under controlled conditions.

Drills and Exercises: Organization of crowd management, evacuation, and firefighting drills to reinforce emergency preparedness.

Group Discussions and Role-Playing: Collaborative activities to enhance communication, leadership, and crisis management abilities.

Workshops and Demonstrations: Guided practice on cargo securing, ship stability calculations, and use of emergency equipment.

Multimedia Tools: Use of videos, simulation software, and visual aids to illustrate complex safety operations.

Assessment and Feedback Sessions: Continuous evaluation through quizzes, practical performance tests, and instructor feedback.

Sample Questions

- Explain the main responsibilities of crew members during a passenger ship emergency evacuation.
- What are the critical differences between crowd management and crisis management on board passenger ships?
- List the essential steps to be followed when operating a Fast Rescue Boat (FRB) in heavy weather conditions.
- A Ro-Ro passenger ship is preparing to load dangerous cargo. What kind of safety measures and precautions must be implemented before, during, and after loading a dangerous cargo onto a RORO vessel?
- What is the correct method of launching and recovering a Fast Rescue Boat using appropriate equipment?
- Name and explain the function of at least five of the safety and emergency equipment used on passenger ships.

Materials Used in the Course

Textbooks and Reference Books

- Lecturer Notes, Related IMO Model Courses and STCW (Standards of Training, Certification, and Watchkeeping) manuals.
- SOLAS Consolidated Edition, LSA Code, FSS Code, The Fire Fighting System Guidance, Fire Prevention and Fire Fighting, Master Guide for Fire and Safety on Ferries, Safety of RORO Passenger and Cruise Ships, Guidelines for Contingency Plans on Passenger Ships, Emergency Procedures and Check Lists at Sea
- Related IMO Model Courses and STCW (Standards of Training, Certification, and Watchkeeping) manuals.
- Maritime Safety textbooks covering Passenger Ship Safety, Safety on RORO vessels, Fast Rescue Boats and Emergency Procedures, including SOLAS, STCW, ISPS Code, LSA Code, and FSS Code
    - SOLAS Consolidated Edition
    - LSA Code
    - FSS Code
    - The Fire Fighting System Guidance
    - Fire Prevention and Fire Fighting
    - Master Guide for Fire and Safety on Ferries
    - Safety of RORO Passenger and Cruise Ships
    - Guidelines for Contingency Plans on Passenger Ships
    - Emergency Procedures and Check Lists at Sea

Supplementary Resources

- Instructional videos
- Interactive simulations
- Real-life accident investigation reports for analysis and discussion
- Safety posters, diagrams, and procedural flowcharts
- Fast Rescue Boat (FRB) and associated launching/recovery equipment
- Personal Life-Saving Appliances (lifejackets, immersion suits, lifebuoys, etc.)
- Firefighting equipment (extinguishers, breathing apparatus, hoses, fixed systems)
- Passenger evacuation plans, crowd management drill scenarios, and muster lists
- Communication tools (radios, public address systems, emergency alarms)

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.			✓		Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.			✓		Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.				✓	Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.			✓		Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.				✓	Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.				✓	Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	**CLO10**
PO1	3	3	3	3	3	3	3	3	x	x
PO2	3	3	3	3	3	3	3	3	x	x
PO3	3	3	3	3	3	3	3	3	x	x
PO4	2	2	2	2	2	2	2	2	x	x
PO5	3	3	3	3	3	3	3	3	x	x
PO6	3	3	3	3	3	3	3	3	x	x
PO7	3	3	3	3	3	3	3	3	x	x
PO8	2	2	2	2	2	2	2	2	x	x
PO9	2	2	2	1	1	1	1	1	x	x
PO10	3	3	3	3	3	3	3	3	x	x
PO11	3	3	3	3	3	3	3	3	x	x
PO12	3	3	3	3	3	3	3	3	x	x

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
LO1	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO2	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO3	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO4	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO5	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO6	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO7	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment
LO8	Lectures, Practical Applications, Case Studies, and Discussions	Midterm Exam, Practical Exam, Final Exam, Assignment

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**3**	**45**
Midterm Exam	**1**	**1**	**1**
Preparation for Midterm Exam	**1**	**5**	**5**
Final Exam	**1**	**1**	**1**
Preparation for Final Exam	**1**	**5**	**5**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	-	-	-
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**1**	**5**	**5**
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**92**
ECTS Credit			**3**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	1	10
Laboratory	-	-
Application	1	25
Field Work (Class Work)	-	-
Special Course Internship (Work Placement)	-	-
Assignment(s)/Homework/Class Works	1	10
Providing reliability and motivation for the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	20
Final/Oral Exams	1	35
Total	**5**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check the instructor's web page frequently for the course announcements. • The University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		

University of Kyrenia

Maritime Vocational School

Marine Transportation and Management

Syllabus

Course name: Technical Ship Management							
Code	**Year**	**Semester**	**Credit**	**ECTS**	**Course application, Hour/Week**		
					Theoretical	**Application**	**Laboratory**
TSM202	II	Spring	3	3	2	2	0
Course type: Compulsory				**Prerequisite: x**		**Language:** English	
% Contribution to the Professional Fundamental Component				**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
				-	-	-	100
Course Venue and Time				Tuesday / 10:30 – 13:20			
Instructor information				**Cpt. Caner Özbilgiç** Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4060 mehmetemin.debes@kyrenia.edu.tr www.kyrenia.edu.tr			

Course Description	This course provides an in-depth exploration of the fundamental principles and practices of maritime commercial and technical ship management. It covers the operational, legal, and financial aspects of maritime trade, including liner and tramp markets, chartering practices, freight markets, and key shipping documentation. Students will learn the technical management requirements of ships, including maintenance, classification, surveys, compliance with international regulations, and safety audits. The course also emphasizes safety, environmental protection, and quality management systems in accordance with international conventions such as the ISM Code and MARPOL. In addition, students will develop leadership, decision-making, and teamwork skills essential for effective crew and resource management. A significant focus is placed on maritime English terminology used in commercial and technical documentation, enhancing students' ability to operate in an international maritime environment. Through theoretical lectures, case studies, and practical applications, students gain a comprehensive understanding of how modern shipping companies manage vessels efficiently while meeting safety, environmental, and commercial obligations.
Course Aims and Objectives	**Aim:** The primary aim of this course is to equip students with the theoretical knowledge and practical skills required to effectively manage commercial and technical aspects of maritime operations while ensuring compliance with international safety, environmental, and quality standards. **Objectives:** By the end of the course, students will be able to: 1. **Understand and analyze** the structure and dynamics of maritime markets, including liner and tramp shipping, chartering practices, and freight contracts. 2. **Interpret and apply** international maritime laws, conventions, and regulations related to ship operations, safety management, and environmental protection. 3. **Develop and implement** safety and quality management systems (SMS & QMS) in compliance with ISM Code and other relevant standards. 4. **Manage technical operations** of ships, including maintenance planning, classification surveys, and regulatory inspections. 5. **Apply leadership and decision-making skills** for effective crew management, workload planning, and resource allocation onboard and ashore. 6. **Use professional maritime English terminology** accurately in commercial, technical, and regulatory documentation, including INCOTERMS, charter parties, statements of facts, and time sheets. 7. **Evaluate and improve operational performance** of shipping companies while balancing safety, environmental, and commercial considerations.

Course Learning Outcomes	**CLO1: Explain** the fundamental principles of maritime commercial operations, including liner and tramp shipping, chartering types, and freight markets. *(Knowledge/Understanding)* **CLO2: Interpret and apply** international maritime conventions, safety and environmental regulations, and quality management standards (e.g., ISM Code, classification society requirements). *(Application)* **CLO3: Analyze** various types of charter parties and shipping documentation (e.g., bills of lading, statements of facts, time sheets) and their legal and commercial implications. *(Analysis)* **CLO4: Develop** maintenance, inspection, and technical operation plans for ships in accordance with regulatory requirements and industry best practices. *(Synthesis/Design)* **CLO5: Assess and manage** risks related to maritime safety, environmental protection, and cargo operations, including pollution prevention measures. *(Evaluation)* **CLO6: Communicate effectively** in professional maritime English using correct terminology for technical, operational, and commercial contexts (e.g., INCOTERMS, ship management reports). *(Communication)* **CLO7: Demonstrate** leadership, teamwork, and decision-making skills in managing shipboard personnel, workload planning, and emergency situations. *(Professional/Soft Skills)* **CLO8: Evaluate and propose improvements** to safety, quality, and technical management systems to enhance overall operational efficiency and compliance. *(Evaluation/Problem-Solving)*

Content of the Course

Week	*Subject*
1	**Introduction to Technical Ship Management** • Overview of ship technical management • Tracking regulations and compliance requirements • Ship documentation and inspection procedures
2	**Maintenance and Record Keeping** • Maintenance management and record-keeping systems • Correspondence and reporting in technical management • Planning for repairs and preventive maintenance
3	**Personnel and Training Management** • Crew management principles • Training programs and competency tracking • Safety and supply management related to personnel
4	**Material and Inventory Management** • Materials tracking and record keeping • Planning for equipment and supply needs • Stock management and logistic coordination
5	**Concepts of Safety, Environment, and Quality** • Introduction to safety management • Environmental protection principles • Quality concepts in maritime operations
6	**Marine Environmental Protection and Pollution Prevention** • Measures to prevent marine pollution • Pollution prevention procedures and equipment • Importance of proactive environmental protection
7	**Legal and Commercial Requirements for Safety and Quality Management** • ISM Code overview • International and national quality standards • Regulatory compliance for safety and environmental protection
8	**Safety and Quality Management Systems (Preparation and Implementation)** • Establishing a Safety Management System (SMS) • Implementing a Quality Management System (QMS) • Internal and external audits: techniques and application
9	**Leadership and Teamwork in Maritime Operations** • Crew management and education strategies • Effective team communication and coordination • Motivational and leadership skills development
10	**Maritime Legislation and Regulations** • International conventions and national maritime legislation

	• Compliance and enforcement mechanisms • Legal obligations related to ship operations
11	**Task and Workload Management** • Planning and task allocation • Prioritization under time and resource constraints • Delegation and monitoring of tasks onboard
12	**Resource Management in Maritime Operations** • Allocation and prioritization of resources • Effective ship-to-shore communication • Lessons from team experience and decision-making reflection
13	**Decision-Making Techniques I** • Situation and risk assessment • Evaluating alternatives and selecting actions • Decision-making frameworks and approaches
14	**Decision-Making Techniques II** • Implementing decisions in real operational scenarios • Monitoring and adjusting actions • Evaluating effectiveness of decisions
15	**Integration and Practical Application** • Case studies of technical ship management • Simulation of safety, quality, and operational decision-making • Review and consolidation of leadership, management, and technical skills

Methods and Techniques used in the Course

- **Interactive Lectures** – Instructor-led sessions to explain core concepts of technical management, safety, quality, and environmental regulations.
- **Case Studies** – Analysis of real-world scenarios to illustrate challenges in ship management, maintenance, and compliance.
- **Group Discussions** – Collaborative discussions to develop problem-solving skills and exchange ideas on operational and safety topics.
- **Problem-Solving Exercises** – Practical exercises focusing on planning, decision-making, and prioritization in ship operations.
- **Document Analysis and Simulation** – Reviewing ship documents, audits, and reports to practice regulatory compliance and management procedures.
- **Role-Playing and Scenario-Based Learning** – Simulating onboard situations such as emergencies, resource allocation, and crew management to develop leadership and decision-making skills.

Sample Questions

- Explain the key principles of technical ship management and their importance for safe and efficient vessel operation.
- Describe the main components of a Safety Management System (SMS) according to the ISM Code.
- How would you plan preventive maintenance for a ship's machinery and equipment?
- Discuss the steps involved in preparing a ship for dry-docking.
- Explain how crew training and resource management contribute to the effective operation of a ship.
- What are the legal and regulatory requirements for environmental protection on ships?
- Describe the process of conducting internal and external audits for technical management and quality systems.
- How can decision-making and prioritization techniques be applied in case of multiple technical issues on board?
- Identify the main challenges in technical ship management and propose solutions to mitigate them.
- Discuss the role of documentation and record-keeping in ensuring compliance with international maritime standards.

Materials Used in the Course

Textbooks & Reference Books

- IMO **International Safety Management (ISM) Code** documentation
- Manuals on **ship maintenance and machinery operation**
- Books on **maritime technical management and leadership**
- Industry standards on **environmental protection and quality management**

International and National Regulations

- SOLAS (Safety of Life at Sea)
- MARPOL (Marine Pollution)
- Flag state regulations
- Port state control guidelines

Guidelines & Reports

- Shipboard **Safety Management System (SMS)** manuals
- Technical and operational checklists
- Dry-docking and survey reports

Online Resources & Industry Databases

- IMO and ILO websites for updates on maritime regulations
- Industry publications and case studies on **ship management best practices**

Practical Materials

- Sample **maintenance logs, inspection checklists, and vessel records**
- Crew management and training materials
- Templates for **risk assessment, decision-making, and reporting**

All the above listed books are available at UoK's Grand Library

Program Outcomes Matrix

	Program Outcomes	*Level of Contribution				Targeted Competence Areas
		0	1	2	3	
1	Demonstrate comprehensive knowledge of navigation sciences, ship handling, cargo operations, and seamanship in accordance with STCW requirements.				✓	Technical & Navigational Expertise
2	Operate and manage shipboard systems, electronic navigation equipment (ECDIS, ARPA, GMDSS), and emerging smart technologies with precision and reliability.				✓	Digital Navigation & Operations
3	Apply maritime safety standards, emergency procedures, and risk assessment practices to ensure the safety of life at sea and environmental protection.				✓	Safety & Risk Management
4	Employ advanced meteorology, oceanography, and route planning methods to optimize voyages under changing environmental and economic conditions.				✓	Voyage Planning & Environmental Awareness
5	Demonstrate leadership, decision-making, and crisis management skills in multicultural and interdisciplinary maritime teams.				✓	Leadership & Decision-Making
6	Apply international maritime law, conventions, and flag state regulations in navigation, cargo management, and ship operations.			✓		Maritime Law & Compliance
7	Manage cargo operations (loading, stowage, securing, and discharge) with attention to safety, efficiency, and international trade standards.			✓		Cargo & Logistics Management
8	Integrate principles of sustainability and green shipping in ship operations, voyage optimization, and environmental protection measures.				✓	Sustainability & Environmental Stewardship
9	Utilize project management, business acumen, and managerial competencies for effective maritime transport operations and logistics planning.				✓	Project & Transport Management
10	Communicate effectively in maritime English, applying IMO SMCP (Standard Marine Communication Phrases) and professional reporting techniques.				✓	Maritime Communication
11	Commit to ethical conduct, professional responsibility, and respect for cultural diversity within the global maritime workforce.			✓		Ethics & Professionalism
12	Engage in lifelong learning, continuous professional development, and adaptation to technological innovations in the maritime transport sector.			✓		Lifelong Learning & Adaptability

***0:** No Contribution
1: Little Contribution
2: Partial Contribution
3: Full Contribution

Program Outcomes /Course Learning Outcomes Matrix **Level of Contribution**:**0**-No Contribution **1**-Little Contribution **2**-Partial Contribution **3**-Full Contribution										
PO	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**	**CLO9**	**CLO10**
PO1	3	3	2	3	3	2	2	2	0	0
PO2	2	3	2	3	2	3	2	2	0	0
PO3	3	2	3	2	3	2	3	2	0	0
PO4	2	3	2	3	2	3	2	2	0	0
PO5	3	2	3	2	3	2	3	2	0	0
PO6	2	2	2	3	2	2	2	3	0	0
PO7	2	2	2	2	2	2	2	2	0	0
PO8	1	1	1	2	2	1	1	2	0	0
PO9	1	1	1	1	2	1	1	2	0	0
PO10	1	1	2	1	2	2	2	2	0	0
PO11	1	1	1	2	1	1	2	1	0	0
PO12	1	1	1	2	1	1	2	1	0	0

Course Learning Outcomes/ Evaluation Method		
CLO	**Teaching Method**	**Assessment Method**
CLO1 – Maritime Commercial Principles	Lecture, Case Studies, Group Discussion	Quizzes, Written Assignments, Midterm Exam
CLO2 – International Regulations & Standards	Lecture, Tutorials, Problem-Solving Sessions	Assignments, Case Study Reports, Midterm Exam
CLO3 – Charter Parties & Documentation Analysis	Lecture, Practical Exercises, Document Review	Assignments, Written Case Studies, Project Work
CLO4 – Maintenance & Technical Operations Planning	Workshops, Simulations, Group Projects	Project Reports, Practical Exercises, Presentations
CLO5 – Risk Assessment & Management	Case Studies, Problem-Based Learning, Simulations	Risk Assessment Reports, Quizzes, Practical Exercises
CLO6 – Professional Maritime English	Role-Playing, Communication Exercises, Presentations	Oral Presentations, Written Assignments, Participation
CLO7 – Leadership & Teamwork	Group Exercises, Simulations, Scenario-Based Learning	Peer Evaluation, Practical Exercises, Observation
CLO8 – Safety, Quality & Technical Management Evaluation	Case Studies, Workshops, Problem-Solving Exercises	Project Reports, Assignments, Presentations

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Preparation for lectures	**15**	**1**	**15**
Lectures	**15**	**4**	**60**
Midterm Exam	**1**	**2**	**2**
Preparation for Midterm Exam	**1**	**10**	**10**
Final Exam	**1**	**2**	**2**
Preparation for Final Exam	**1**	**10**	**10**
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Research for Project(s)/Essay(s)	-	-	-
Project Writing	-	-	-
Group Work	-	-	-
In-class Discussion(s)	**15**	**1**	**15**
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
Assignment(s)/Homework/Class Works	**1**	**20**	**20**
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			**134**
ECTS Credit			**3**

Evaluation System		
Semester Requirements	**Number**	**Percentage of Grade**
Attendance/Participation	15	10
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	1	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	50
Total	**4**	**100**

	Percentage	**Course Grade**	**Coefficient**
Grading Policy	90-100	AA	4.0
	85-89	BA	3.5
	80-84	BB	3.0
	75-79	CB	2.5
	70-74	CC	2.0
	60-69	DC	1.5
	50-59	DD	1.0
	49 and below	FF	0.0
	Less than 70% attendance	NA	-
Course Requirements and Policies	• Alerted attendance at the lectures is essential! • Students are expected to check frequently the instructor's web page for the course announcements. • University of Kyrenia honor code will be strictly enforced regarding any issues concerning cheating.		