



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus



Course name: Introduction to Information Technologies									
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week				
					Theoretical	Application	Laboratory		
CMP102	I	Spring	3	3	3	0	0		
Course type: Compulsory 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 / 08:30 – 11:20							
Instructor information		<p style="text-align: center;">Aydoğan Erkan Faculty of Maritime Studies Friday / 09:00 – 12:00 +90 (392) 650 26 00 / 4060 aydogan.erkan@kyrenia.edu.tr www.kyrenia.edu.tr</p>							

	<p>This course provides a comprehensive introduction to the fundamental concepts and applications of information technologies. Students will explore the internal components of computer systems, understand the roles of hardware and software, and examine the principles of system and application software. The course also covers the use of input/output and storage devices, the organization and management of data, and the fundamentals of the Internet and the World Wide Web.</p> <p>Course Description</p> <p>Practical skills in commonly used productivity software, including Microsoft Word and Excel, are emphasized to develop students' ability to create, format, manage, and present digital documents and data effectively. By the end of the course, students will have a solid foundation in both the theoretical and practical aspects of information technologies, enabling them to apply IT skills in academic, professional, and everyday contexts.</p>
<p>Course Aims and Objectives</p>	<p>The aim of this course is to provide students with a solid understanding of the principles, components, and applications of information technologies. It seeks to develop both theoretical knowledge and practical skills, enabling students to effectively use digital tools and software for personal, academic, and professional purposes. The course also emphasizes the critical role of IT in modern society and introduces students to best practices in data management, document preparation, and digital communication.</p> <ul style="list-style-type: none"> • Understand the internal structure and components of computer systems, including the system unit, input/output, and storage devices. • Explain the functions and types of system software and application software. • Navigate and utilize the Internet and the World Wide Web for information retrieval and communication. • Develop proficiency in word processing, including document creation, editing, formatting, and management using Microsoft Word. • Apply spreadsheet skills in Microsoft Excel to organize, analyze, and present data effectively. • Demonstrate the ability to integrate graphical objects, tables, and other visual elements into digital documents. • Apply IT knowledge to solve practical problems and complete tasks efficiently in academic and professional contexts.
	<p>CLO1 – Computer Systems Fundamentals: Demonstrate a clear understanding of the basic components and functions of computer systems, including the system unit, input/output devices, and storage technologies.</p>

Course Learning Outcomes	<p>CLO2 – System and Application Software: Explain the roles, functionalities, and practical applications of system software and application software in computing environments.</p> <p>CLO3 – Internet and Web Navigation: Navigate and utilize the Internet and the World Wide Web effectively for research, communication, and information retrieval.</p> <p>CLO4 – Word Processing – Basic: Create, edit, format, and manage documents using Microsoft Word, including tables, graphical objects, and print-ready layouts.</p> <p>CLO5 – Word Processing – Advanced: Apply advanced document management techniques, such as organizing, revising, and sharing digital documents.</p> <p>CLO6 – Spreadsheet Skills – Basic: Use Microsoft Excel for data entry, formatting, basic calculations, and creating charts and visual representations of data.</p> <p>CLO7 – Spreadsheet Skills – Advanced / Data Analysis: Apply formulas, functions, and analytical tools in spreadsheets to solve practical problems and visualize data.</p> <p>CLO8 – Problem-Solving and Critical Thinking: Develop problem-solving and critical thinking skills through practical exercises and the application of IT tools.</p> <p>CLO9 – IT for Academic and Professional Tasks: Demonstrate proficiency in using IT applications to support academic, professional, and personal tasks.</p> <p>CLO10 – Integrated IT Applications: Combine multiple IT skills and software tools to increase productivity, organize information, and communicate effectively across various contexts.</p>
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Content of the Course

Week	Subject
1	Course Introduction and Syllabus Overview <ul style="list-style-type: none"> • Overview of the course objectives, learning outcomes, and assessment methods • Importance of information technologies in modern society and professional life • Understanding basic IT terminology and concepts
2	Inside the System Unit <ul style="list-style-type: none"> • Components of a computer system: CPU, memory, motherboard, and power supply • Types of computers: desktops, laptops, servers, embedded systems • How the system unit interacts with input/output devices and storage
3	Input, Output, and Storage Devices <ul style="list-style-type: none"> • Input devices: keyboard, mouse, scanner, digital cameras • Output devices: monitors, printers, speakers • Storage devices: HDDs, SSDs, optical disks, flash drives, cloud storage • Comparison of storage technologies and their performance metrics
4	System Software <ul style="list-style-type: none"> • Operating systems: purpose, types, and examples (Windows, Linux, macOS) • Utility software: file management, antivirus programs, disk management • Boot process and system configuration
5	Application Software <ul style="list-style-type: none"> • Difference between system software and application software • Categories: productivity software, multimedia software, database software • Overview of common office applications and specialized software
6	The Internet and the World Wide Web <ul style="list-style-type: none"> • History and development of the Internet • Internet services: email, VoIP, cloud computing, file sharing • Web technologies: browsers, search engines, websites, web security basics
7	Midterm Exam <ul style="list-style-type: none"> • Review of Weeks 1–6 • Assessment covering theory and practical knowledge of computer components, software, and internet basics
8	Introduction to Word <ul style="list-style-type: none"> • Basic interface and navigation of Word • Creating, opening, saving, and closing documents • Understanding document templates and styles
9	Editing Documents <ul style="list-style-type: none"> • Selecting, copying, cutting, and pasting text • Using Undo, Redo, Find, and Replace features • Inserting symbols, hyperlinks, and page breaks
10	Formatting Text <ul style="list-style-type: none"> • Font styles, sizes, and colors • Paragraph formatting: alignment, indentation, spacing • Applying bullets, numbering, and multilevel lists
11	Managing Documents & Working with Tables <ul style="list-style-type: none"> • Using headers, footers, and page numbers • Creating, formatting, and modifying tables

	<ul style="list-style-type: none"> Sorting and calculating data in tables
12	Working with Graphical Objects <ul style="list-style-type: none"> Inserting and formatting images, shapes, and SmartArt Using WordArt, text boxes, and charts Arranging objects and layering techniques
13	Printing Documents & Revision <ul style="list-style-type: none"> Document layout and page setup Print preview, printing options, and print settings Revision strategies: reviewing changes, comments, and track changes
14	Introduction to Excel <ul style="list-style-type: none"> Understanding spreadsheet concepts and the Excel interface Creating and saving workbooks Entering data, basic formulas, and simple functions Introduction to charts and basic data visualization
15	Final Exam <ul style="list-style-type: none"> Comprehensive assessment covering Word, Excel, and general IT concepts Practical exercises and problem-solving tasks

Methods and Techniques used in the Course

Lectures and Interactive Presentations: Detailed explanations of IT concepts, system components, and software applications, supported by slides, diagrams, and live demonstrations.

Hands-on Laboratory Exercises: Practical sessions in computer labs for students to apply concepts, including document creation in Word and spreadsheet operations in Excel.

Guided Tutorials: Step-by-step instruction on performing tasks, troubleshooting errors, and mastering software functions.

Case Studies and Problem-Solving Exercises: Real-world scenarios to develop critical thinking and application skills.

Group Work and Collaborative Projects: Encouraging teamwork to complete tasks and projects using IT tools.

Quizzes and Formative Assessments: Regular in-class or online quizzes to reinforce understanding and track progress.

Independent Assignments and Practice Tasks: Homework and exercises to consolidate skills learned in class.

Discussion and Question-Answer Sessions: Opportunities for students to clarify concepts, discuss challenges, and explore advanced applications.

Demonstrations of Internet and Web Tools: Practical exposure to searching, browsing, and using web-based resources effectively.

Sample Questions

Multiple Choice Questions (MCQs):

- Which of the following is an example of an input device?
 - a) Monitor
 - b) Keyboard
 - c) Printer
 - d) Speaker
- What is the primary function of system software?
 - a) Create documents
 - b) Control and manage hardware
 - c) Browse the internet
 - d) Format spreadsheets

True/False Questions:

- The CPU is considered the brain of the computer. (True/False)
- Excel cannot be used for data analysis. (True/False)

Short Answer Questions:

- Explain the difference between system software and application software.
- List three types of storage devices and briefly describe each.

Practical/Applied Questions:

- Create a Word document including a table and insert a graphical object.
- Using Excel, create a simple spreadsheet to calculate the total cost of items and apply a formula for automatic summation.

Scenario-Based Questions:

- Your manager asks you to prepare a report including text, tables, and images. Which software would you use, and which steps would you follow to ensure proper formatting and presentation?
- A company wants to organize its employee data in a spreadsheet. Explain how you would structure the data and which Excel functions could help in summarizing information.

Essay/Long Answer Questions:

- Discuss the role of the Internet and World Wide Web in modern business and education.
- Explain the components of a system unit and their functions in detail.

Materials Used in the Course

Textbooks and Reference Books:

- Shelly, G. B., Vermaat, M. E. *Discovering Computers 2019: Digital Technology, Data, and Devices*. Cengage Learning.
- Frydenberg, Mark. *Microsoft Office 2019 Step by Step*. Microsoft Press.
- Tanenbaum, Andrew S. *Structured Computer Organization*. Pearson.

Software Applications:

- Microsoft Word (2010 or later)
- Microsoft Excel (2010 or later)
- Web browsers (Chrome, Firefox, Edge) for Internet and WWW exercises
- Operating systems: Windows or MacOS

Hardware Tools:

- Desktop or laptop computers
- Input devices: keyboard, mouse, scanner
- Output devices: monitor, printer
- Storage devices: external hard drives, USB flash drives

Online Resources and Tutorials:

- Microsoft Office official tutorials and help guides
- Online IT courses (e.g., Coursera, Khan Academy) for additional practice
- Interactive simulations for understanding system units, storage, and networking

Lecture Materials and Handouts:

- Instructor-prepared lecture slides and notes
- Step-by-step manuals for Word and Excel exercises
- Sample projects and templates for hands-on practice

Multimedia Tools:

- Videos demonstrating software usage
- Interactive exercises and quizzes for reinforcing concepts

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	2	3	2	2	2	2	2
PO2	1	1	2	2	1	2	2	2	3	2
PO3	2	2	2	1	2	2	3	3	2	2
PO4	1	1	1	1	2	3	3	1	1	2
PO5	3	1	3	2	2	2	2	2	3	2
PO6	2	2	2	2	3	2	3	2	2	2
PO7	1	1	1	1	1	1	1	1	1	1
PO8	1	1	1	1	0	1	1	1	1	1
PO9	1	1	1	1	1	1	1	1	0	1
PO10	1	1	2	3	3	2	1	1	1	3
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 – Computer Systems Fundamentals	Lecture, Multimedia Presentation, Demonstration	Quizzes, Midterm Exam, Assignments
CLO2 – System and Application Software	Lecture, Tutorials, Case Studies	Quizzes, Assignments, Midterm Exam
CLO3 – Internet and Web Navigation	Lecture, Hands-on Practice, Online Exercises	Practical Exercises, Assignments, Quizzes
CLO4 – Word Processing – Basic	Lecture, Demonstration, Hands-on Training	Lab Reports, Practical Exams, Assignments
CLO5 – Word Processing – Advanced	Guided Exercises, Project Work, Workshops	Project Reports, Practical Exams, Lab Exercises
CLO6 – Spreadsheet Skills – Basic	Lecture, Hands-on Training, Tutorials	Lab Reports, Practical Exercises, Quizzes
CLO7 – Spreadsheet Skills – Advanced / Data Analysis	Problem-Solving Exercises, Case Studies, Hands-on Practice	Lab Reports, Project Work, Practical Exams
CLO8 – Problem-Solving and Critical Thinking	Scenario-Based Exercises, Group Discussions, Hands-on Practice	Assignments, Practical Exams, Quizzes
CLO9 – IT for Academic and Professional Tasks	Lecture, Guided Projects, Tutorials	Project Reports, Assignments, Quizzes
CLO10 – Integrated IT Applications	Integrated Exercises, Case Studies, Group Projects	Project Reports, Practical Exams, Lab Exercises

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	20	20
Final Exam	1	3	3
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)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
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			106
ECTS Credit			3

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	-	-
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	40
Final/Oral Exams	1	60
Total	2	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus



Course name: English II							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
ENG102	I	Spring	3	3	3	0	0
Course type: Compulsory 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			<p style="text-align: center;">Aydoğan Erkan Faculty of Maritime Studies Friday / 09:00 – 12:00 +90 (392) 650 26 00 / 4060 aydogan.erkan@kyrenia.edu.tr www.kyrenia.edu.tr</p>				

Course Description	<p><i>English II (ENG 102)</i> is designed to enhance students' ability to communicate effectively in English by focusing on language use in everyday life situations. The course introduces vocabulary, expressions, and basic grammatical structures at the A2/B1 level of the Common European Framework of Reference for Languages (CEFR). Emphasis is placed on developing functional language skills for real-life communication, including greetings, introductions, describing people and routines, asking for information, expressing preferences, and making simple social interactions.</p> <p>Students will engage in a variety of communicative activities such as role-plays, dialogues, and listening comprehension exercises to improve fluency, accuracy, and confidence in using English. The course also aims to raise awareness of how language conveys meaning in specific contexts, enabling learners to respond appropriately in both familiar and new situations. By the end of the course, students will be able to participate in basic conversations, understand spoken English in common contexts, and use everyday vocabulary effectively in speaking and listening tasks.</p>
Course Aims and Objectives	<p>The primary aim of <i>English I (ENG 101)</i> is to provide students with the fundamental linguistic tools and communicative strategies needed to interact in everyday situations at an A2/B1 level of the CEFR. The course aims to build students' confidence in using English as a medium of communication by focusing on functional language use, vocabulary expansion, and listening and speaking skills.</p> <ul style="list-style-type: none"> • Understand and use everyday expressions and basic phrases related to immediate needs and familiar topics. • Introduce themselves and others, ask and answer questions about personal details, and describe daily routines. • Use appropriate vocabulary and expressions to interact in contexts such as shopping, travel, health, socializing, and work. • Demonstrate the ability to ask for and give directions, make arrangements, and express likes, dislikes, and preferences. • Apply strategies to maintain conversations in English, including making invitations, offers, suggestions, and responding politely. • Develop basic listening comprehension skills for real-life communication scenarios. • Strengthen oral fluency and accuracy through practice in dialogues, role-plays, and discussions. • Gain cultural awareness by comparing customs, traditions, and social practices across cultures.

Course Learning Outcomes	<p>CLO1: Communicate effectively in everyday contexts using appropriate vocabulary, expressions, and structures at an A2/B1 CEFR level.</p> <p>CLO2: Introduce themselves and others, and exchange personal information accurately in both spoken and written forms.</p> <p>CLO3: Describe daily routines, habits, hobbies, and preferences using common verbs, adjectives, and frequently used expressions.</p> <p>CLO4: Ask for and give directions, make requests, and express needs in everyday situations such as shopping, travel, and dining.</p> <p>CLO5: Demonstrate comprehension of short oral texts, including conversations and dialogues, through listening-based tasks.</p> <p>CLO6: Express personal opinions, likes, dislikes, and preferences in social and interpersonal communication.</p> <p>CLO7: Participate actively in role-plays and dialogues that simulate real-life communication settings (e.g., health, work, travel, social interactions).</p> <p>CLO8: Apply basic grammatical structures—including present, past, and future tenses; prepositions; and question forms—to produce accurate and meaningful sentences.</p> <p>CLO9: Use English appropriately for intercultural communication, demonstrating awareness of cultural similarities and differences in daily life and traditions.</p> <p>CLO10: Show improved confidence and fluency in speaking, listening, and engaging in conversations in English.</p>
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Content of the Course

Week	Subject
1	Introduction & Course Orientation <ul style="list-style-type: none"> • Course overview and objectives • Importance of English in daily life • Introduction to basic greetings and self-introduction • Classroom language and expressions
2	Talking About Yourself and Others <ul style="list-style-type: none"> • Describing yourself, family, and friends • Asking and answering personal questions • Common verbs and adjectives for description
3	Daily Routines and Habits <ul style="list-style-type: none"> • Vocabulary for everyday activities • Talking about routines using simple present tense • Time expressions (e.g., always, usually, sometimes)
4	Places and Directions <ul style="list-style-type: none"> • Vocabulary for locations in town and transportation • Asking for and giving directions • Prepositions of place and movement
5	Food and Drinks <ul style="list-style-type: none"> • Vocabulary related to meals, groceries, and restaurants • Ordering food and drinks • Expressing likes, dislikes, and preferences
6	Hobbies and Free Time <ul style="list-style-type: none"> • Vocabulary for hobbies, sports, and leisure activities • Talking about routines and preferences • Using frequency adverbs
7	Shopping and Money <ul style="list-style-type: none"> • Vocabulary for shopping, products, and prices • Asking for information and making purchases • Expressing quantity and cost
8	Health and Illness <ul style="list-style-type: none"> • Vocabulary for body parts, symptoms, and medical situations • Expressing how you feel and giving advice • Making simple requests for help
9	Work and Professions <ul style="list-style-type: none"> • Vocabulary for jobs, workplaces, and daily tasks • Talking about duties and responsibilities • Asking and answering about someone's work
10	Travel and Transportation <ul style="list-style-type: none"> • Vocabulary for travel, tickets, and accommodations • Asking for travel information and making arrangements • Discussing past and future travel plans
11	Weather and Environment <ul style="list-style-type: none"> • Vocabulary for weather conditions, seasons, and nature • Describing the environment and climate

	<ul style="list-style-type: none"> Making small talk about the weather
12	<p>Socializing and Making Plans</p> <ul style="list-style-type: none"> Invitations, offers, and suggestions Accepting and refusing politely Talking about future arrangements using “will” and “going to”
13	<p>Culture and Daily Life</p> <ul style="list-style-type: none"> Vocabulary for festivals, traditions, and cultural activities Comparing your culture with others Expressing opinions and preferences
14	<p>Review of Key Functions and Vocabulary</p> <ul style="list-style-type: none"> Revision of greetings, daily routines, hobbies, and travel Practice dialogues in simulated real-life situations Listening and speaking exercises for comprehension
15	<p>Final Assessment & Speaking Practice</p> <ul style="list-style-type: none"> Oral presentations or dialogues Listening comprehension assessment Review and feedback on progress

Methods and Techniques used in the Course

Communicative Language Teaching (CLT): Focus on real-life communication and functional language use through role-plays, pair work, and group activities.

Task-Based Learning: Students complete meaningful tasks such as dialogues, presentations, and problem-solving activities to practice authentic language.

Listening and Speaking Practice: Regular listening comprehension exercises, oral drills, and speaking activities to improve fluency and accuracy.

Interactive Activities: Games, simulations, and discussions that engage learners in authentic use of vocabulary and expressions.

Reading and Writing Integration: Short texts, dialogues, and written tasks are used to reinforce vocabulary, grammar, and comprehension.

Audio-Visual Aids: Use of multimedia materials, including videos, audio recordings, and digital tools, to enhance listening and speaking practice.

Formative Assessment Techniques: Continuous evaluation through class participation, quizzes, oral practice, and feedback sessions.

Sample Questions

Speaking / Oral Practice:

- Can you introduce yourself and talk about your family?
- What do you usually do on weekends?
- How do you ask for directions to the nearest bus station?
- Could you order a meal at a restaurant?
- How would you make plans with a friend for next Saturday?

Listening Comprehension:

- Listen to a short dialogue between two people in a shop. What are they buying?
- Listen to a weather forecast. What will the weather be like tomorrow?
- Listen to a conversation at a train station. Where is the person traveling?

Reading Comprehension:

- Read a short text about a person's daily routine. What time does he wake up?
- Read a menu from a restaurant. What is the price of the chicken salad?
- Read a travel advertisement. Where is the trip going and how many days does it last?

Writing:

- Write a short paragraph about your favorite hobby.
- Write an email to a friend inviting them to your birthday party.
- Write 5–6 sentences describing your city or town.

Materials Used in the Course

Textbooks

- *English for Everyday Life* – Basic A2/B1 Level
- *Oxford English Grammar and Vocabulary for Students*

Reference Books

- *English Vocabulary in Use: Elementary & Pre-Intermediate*
- *Collins Easy Learning English Grammar & Practice*
- *Oxford Practice Grammar*

Online Resources & Platforms

- Interactive English learning websites (e.g., BBC Learning English, Cambridge English)
- Online quizzes and exercises related to vocabulary, grammar, and listening comprehension
- Video and audio materials for listening practice

Supplementary Materials

- Handouts for weekly topics, dialogues, and exercises
- Flashcards for vocabulary practice
- Role-play and simulation activity sheets for oral communication practice

Tools & Equipment

- Multimedia classroom with projector and audio system
- Computers or tablets for interactive exercises and online practice
- Whiteboard for in-class explanations and group activities

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	2	3	2	1	2	2	2
PO2	1	1	2	2	1	2	1	2	3	2
PO3	2	2	2	1	2	2	3	3	2	2
PO4	1	1	1	1	2	3	3	1	1	2
PO5	3	1	3	2	2	2	2	2	3	2
PO6	2	2	2	2	3	2	3	2	2	2
PO7	1	1	1	1	1	1	1	1	1	1
PO8	1	1	1	1	0	1	1	1	1	1
PO9	1	1	1	1	1	1	1	1	0	1
PO10	1	1	2	3	3	2	1	1	1	3
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, Question–Answer	Midterm Exam, Final Exam
CLO2	Lecture, Pair/Group Work	Midterm Exam, Final Exam
CLO3	Lecture, Practice Activities	Midterm Exam, Final Exam
CLO4	Lecture, Role-Play, Simulations	Quizzes, Midterm Exam, Final Exam
CLO5	Lecture, Listening Activities	Quizzes, Midterm Exam, Final Exam
CLO6	Lecture, Interactive Tasks	Midterm Exam, Final Exam
CLO7	Lecture, Role-Play, Dialogues	Performance Tasks, Final Exam
CLO8	Lecture, Grammar Practice	Quizzes, Midterm Exam, Final Exam
CLO9	Lecture, Cultural Activities	Assignments, Midterm Exam, Final Exam
CLO10	Lecture, Communication Practice	Oral Exam, Midterm Exam, Final Exam

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	20	20
Final Exam	1	3	3
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)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
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			106
ECTS Credit			3

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	-	-
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	40
Final/Oral Exams	1	60
Total	2	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus

Course name: Marine Diesel Engines I							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
MED106	I	Spring	3	4	2	2	0
Course type: Elective			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			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	<p>Marine Diesel Engines I provide students with a comprehensive introduction to the principles, components, and operational procedures of marine diesel engines. The course integrates theoretical knowledge with practical applications to develop competencies in engine operation, maintenance, and safety onboard ships.</p> <p>The course begins with an overview of shipboard maintenance practices, ship safety, and fundamental approaches in marine engineering. Students study internal combustion theory, diesel engine cycles, and the thermodynamic analysis of engine operation, including P-V and T-S diagrams. Concepts of charge air, scavenging, supercharging, and turbochargers are covered, along with compliance with IMO Tier limitations and Annex VI regulations.</p> <p>Engine types—including low, medium, and high-speed diesel engines, trunk piston engines, and crosshead engines—are examined, highlighting their stationary and moving components. Students learn about cylinder valve mechanisms, crankshaft and bearing systems, lubrication, timing mechanisms, camshafts, and fuel injection systems. Engine auxiliary systems such as high and low-temperature cooling, seawater systems, compressed air starting mechanisms, and air distributors are also explored.</p> <p>The course emphasizes engine load and speed control, fuel balancing, automatic operational safety devices, measurement systems, and remote control. Practical sessions and case studies allow students to apply theoretical knowledge, analyze engine performance, and understand environmental considerations, including the use of various fuel types.</p> <p>By the end of the course, students will have gained both theoretical understanding and practical skills necessary for the operation, maintenance, and safe management of marine diesel engines in real-world maritime environments.</p>
Course Aims and Objectives	<p>Course Aims</p> <p>The course aims to provide students with a solid foundation in marine diesel engine theory, operation, and maintenance. It integrates theoretical knowledge with practical skills to ensure students understand engine design, function, performance, and safety measures onboard ships.</p> <p>Course Objectives</p> <p>By the end of the course, students will be able to:</p> <ul style="list-style-type: none"> Understand the fundamental principles of internal combustion and diesel engine cycles. Identify and describe the main components of marine diesel engines, including trunk piston and crosshead engines. Explain the operation of engine auxiliary systems, fuel injection systems, and lubrication systems. Apply theoretical knowledge to practical engine operations, including start-up, load control, and monitoring. Evaluate engine performance and implement maintenance procedures according to best practices and safety regulations. Understand environmental considerations, including emission controls and fuel efficiency in line with IMO regulations.

	<ul style="list-style-type: none"> • Develop problem-solving skills through case studies and practical engine applications.
Course Learning Outcomes	<p>LO1. Explain internal combustion principles, diesel engine cycles, and the operational characteristics of trunk piston and crosshead diesel engines.</p> <p>LO2. Identify and describe the major components and auxiliary systems of marine diesel engines, including lubrication, fuel injection, scavenging, and air management systems.</p> <p>LO3. Analyze engine performance using P–V and T–S diagrams, evaluate the effects of different fuels and combustion methods, and interpret performance parameters for operational decision-making.</p> <p>LO4. Apply safe and effective operational practices for starting, controlling load, monitoring engine conditions, and ensuring reliable engine performance.</p> <p>LO5. Perform maintenance and troubleshooting procedures for marine diesel engines, including preventive measures, identification of common faults, and application of IMO environmental and emissions regulations.</p> <p>LO6. Demonstrate the ability to solve practical engineering problems through hands-on exercises and case studies, while communicating technical information accurately using proper marine engineering terminology.</p>

Content of the Course

Week	Subject
1	Shipboard Maintenance and ship safety, approach of marine engineering methods
2	Internal combustion theory, fuels, cycles and diesel cycles, Pre-combustion & combustion chambers of diesel engines, P-V, T-S diagrams
3	Charge air concept and scavenging types, supercharging, turbocharger and their application to diesel engines including exhaust (IMO Tier limitations and ANNEX VI)
4	Engine types and Low, medium, high speed diesel engines and other engines
5	Types of Trunk piston engines, stationery and running parts of trunk motors
6	Types of Crosshead motors. Stationary and running parts of crosshead diesel engines
7	Mid-Term examination Applications (Study of basic engine theory)
8	Cylinder valve mechanism, their components and operational principles
9	Engine Crankshaft and bearings, lubrication system and components
10	Timing mechanism, chains, gear mechanism and camshaft
11	Fuel system, Fuel injection pumps and valves & boosting system
12	Engine's auxiliary system, HT-LT, SW systems, compressed air starting mechanism and air distributor
13	Engine load/speed control, fuel balancing and fuel governors, standard and automatic operational safety devices, measurement system and remote control
14	Operating diesel engines in different applications onboard and environmental applications and different fuel types
15	Final Exam Applications (Study of extensive engine theory)

Methods and Techniques Used in the Course

Lectures – Conceptual and theoretical explanations of internal combustion engines, marine diesel engine operation, and auxiliary systems.

Laboratory / Practical Sessions – Hands-on exercises on engine components, operational procedures, fuel systems, and measurement tools.

Case Studies – Application-based discussions analyzing real-world scenarios onboard ships, engine failures, and maintenance planning.

Assignments / Homework – Problem-solving exercises and technical calculations related to engine performance, thermodynamic cycles, and fuel efficiency.

Group Work – Collaborative projects focusing on engine system analysis, operational safety, and environmental compliance (IMO Tier standards).

Interactive Discussions / Q&A – Encouraging students to critically evaluate engine operations, fuel management, and safety protocols.

Simulation and Engine Modeling – Where available, the use of software simulators to model engine behavior, fuel consumption, and performance optimization.

Sample Questions

Multiple Choice Questions (MCQs)

- Which of the following is a primary function of the scavenging system in a marine diesel engine?
 - a) Reduce friction losses
 - b) Remove exhaust gases and supply fresh air
 - c) Control fuel injection timing
 - d) Lubricate cylinder liners
- The pre-combustion chamber in a diesel engine is used to:
 - a) Increase thermal efficiency
 - b) Facilitate fuel-air mixing and ignition
 - c) Reduce crankshaft load
 - d) Cool the cylinder head
- IMO Tier III emission regulations mainly limit:
 - a) CO₂ emissions
 - b) SO_x emissions
 - c) NO_x emissions
 - d) Particulate matter

Short Answer Questions

- Explain the difference between trunk piston and crosshead diesel engines.
- Describe the main components of a marine diesel engine fuel injection system and their functions.
- How does turbocharging improve the performance of a marine diesel engine?

Problem-Solving / Calculation Questions

- Given a diesel engine operating at a specific load, calculate the indicated mean effective pressure (IMEP) using P-V diagram data.
- A medium-speed diesel engine consumes 200 g/kWh of fuel. Determine its fuel consumption for 12 hours at 1500 kW.
- Analyze the effect of charge air temperature on engine efficiency and power output.

Case Study / Essay Questions

- Discuss the maintenance planning strategy for a marine main engine to ensure reliability and compliance with environmental regulations.
- Evaluate the potential risks and safety measures when operating diesel engines with alternative fuels onboard a commercial vessel.

Materials Used in the Course

Textbooks:

- *Marine Diesel Engines* – H. D. McGeorge & C. H. W. Nicholls, 4th Edition, Butterworth-Heinemann, 2016.
- *Marine Engineering* – R. N. Harrison, 3rd Edition, Butterworth-Heinemann, 2018.
- *Shipboard Engineering Practice* – J. T. O'Brien, 2nd Edition, Witherby Seamanship International, 2015.

Reference Books / Handbooks:

- *Diesel Engine Handbook* – Bosch, 2nd Edition, SAE International, 2013.
- *Principles of Naval Engineering* – US Navy, NAVSEA, 2018.
- *International Maritime Organization (IMO) Conventions and Annexes* – IMO Publications.

Journals and Articles:

- *Journal of Marine Engineering & Technology (IMarEST)*
- *Marine Structures and Ship Systems*

Software / Simulation Tools:

- Engine performance simulation software (e.g., Wärtsilä Engine Simulator, MAN Diesel & Turbo Simulators)
- Thermodynamic calculation tools (MATLAB/Simulink, EngineCalc)

Laboratory Equipment / Hands-on Tools:

- Diesel engine laboratory setup (trunk piston & crosshead models)
- Fuel injection system demonstration kits
- Pressure, temperature, and torque measurement instruments
- Maintenance tools for engine components (pumps, valves, bearings, crankshafts)
- Safety equipment for engine room practice

Online Resources:

- IMO Tier III and MARPOL Annex VI guidelines
- Manufacturer manuals and operational handbooks for marine engines

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

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	4	4
Final Exam	1	2	2
Preparation for Final Exam	1	6	6
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Case Studies / Critical Thinking	-	-	-
Project Writing	-	-	-
Group Work	1	4	4
In-class Discussion(s)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory / Practical Applications	2	4	8
Assignment(s)/Homework/Class Works	3	4	12
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			113
ECTS Credit			3

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	3	3	2	2
PO2	2	2	2	3	3	3
PO3	1	2	2	2	3	3
PO4	1	2	2	3	2	2
PO5	1	1	2	3	2	3
PO6	2	2	2	2	3	3
PO7	1	1	1	2	3	2
PO8	1	1	1	1	2	2
PO9	1	1	1	1	2	2
PO10	1	1	1	2	2	2
PO11	1	1	1	2	2	2
PO12	2	2	2	2	2	2

Course Learning Outcomes/ Evaluation Method		
CLO	Teaching Method	Assessment Method
CLO1	Lecture, Multimedia Presentation, Demonstration	Written Exam, Quiz, Oral Questioning
CLO2	Lecture, Lab Demonstration, Hands-on Practice	Practical Test, Lab Report, Assignment
CLO3	Lecture, Simulation, Case Study	Written Exam, Case Study Analysis
CLO4	Laboratory, Practical Sessions, Group Exercises	Practical Assessment, Project Work, Observation
CLO5	Workshop, Hands-on Training, Safety Drills	Performance Evaluation, Practical Exam, Logbook Review
CLO6	Case Studies, Project Work, Supervised Practice	Project Report, Oral Presentation, Practical Demonstration

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	2	15
Field Work	1	10
Special Course Internship (Work Placement)	-	-
Homework/Assignments	3	15
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	30
Total	8	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus



Course name: Marine Auxiliary Machinery I							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
MED108	I	Spring	3	3	2	2	0
Course type: Elective			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			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	<p>This course introduces students to the fundamental principles, components, and operational aspects of marine auxiliary machinery, with a particular focus on piping systems, pumps, compressors, and heat exchangers. Students will explore the design and function of liquid and gas transfer systems, including valves, fittings, and safety mechanisms. Emphasis is placed on pump theory, control methods, and maintenance practices, as well as the application of heat exchangers in shipboard systems such as coolers, heaters, boilers, evaporators, and condensers. The course also covers compressed air production, auxiliary piping systems, and specialized shipboard systems including thermal oil units, incinerators, separators, and air handling units. Case studies and practical exercises are used to strengthen understanding of real-world marine engineering applications. By the end of the course, students will have developed both theoretical knowledge and practical skills related to the operation, troubleshooting, and maintenance of marine auxiliary machinery.</p>
Course Aims and Objectives	<p>The aim of this course is to provide students with comprehensive knowledge and practical understanding of marine auxiliary machinery and systems essential for safe and efficient ship operation. Students will learn the principles, design, operation, and maintenance of piping systems, pumps, compressors, and heat exchangers, as well as other auxiliary equipment used on board ships.</p> <ul style="list-style-type: none"> • Understand the fundamental design and operational principles of marine piping systems, valves, and fittings. • Explain the theory, types, and operational characteristics of pumps, compressors, and heat exchangers used in marine systems. • Develop knowledge of liquid and gas transfer systems, including safe operation and system protection methods. • Apply planned maintenance practices to auxiliary machinery and recognize common failure modes. • Analyze and evaluate the use of auxiliary systems such as evaporators, incinerators, separators, thermal oil systems, and air handling units. • Gain hands-on experience in identifying, operating, and troubleshooting auxiliary machinery through practical applications and case studies. • Foster awareness of safety procedures and best practices for the effective operation of auxiliary systems on board ships.

Course Learning Outcomes	
	LO1 – Knowledge and Understanding Identify and explain the main components, functions, and operational principles of marine piping systems, valves, pumps, heat exchangers, compressors, and auxiliary machinery. Describe the principles of liquid and gas transfer, heat exchange, and compressed air systems in shipboard applications.
	LO2 – Application of Knowledge Apply basic design concepts, operational practices, and safety procedures to the operation and management of auxiliary systems. Perform planned maintenance, inspections, and troubleshooting on piping systems, pumps, compressors, and heat exchangers.
	LO3 – Analytical and Technical Skills Analyze the operational performance and limitations of different auxiliary machinery under various marine conditions. Interpret and use technical diagrams, symbols, and system drawings for piping and auxiliary systems.
	LO4 – Evaluation and Critical Thinking Evaluate case studies of shipboard auxiliary systems, including water and wastewater systems, evaporators, refrigeration, air handling units, separators, and incinerators. Identify potential issues and propose informed solutions.
	LO5 – Teamwork and Communication Work effectively in teams during group projects and practical applications to address challenges related to auxiliary machinery. Communicate technical information clearly to peers and supervisors.
	LO6 – Problem-Solving and Decision-Making Develop problem-solving and decision-making skills in operating, maintaining, and managing marine auxiliary systems, ensuring compliance with safety regulations and operational standards. Demonstrate independent judgment in addressing complex system challenges.

Content of the Course

Week	Subject
1	Fundamentals of piping systems and components of liquid circuit lines, primary valves, valve types
2	Basic piping system design, pipe materials, valve types and symbols and discussions of different piping systems in engine room/onboard with fittings
3	Pump theory and liquid transfer, pump types and functions of different pumps in ship machinery systems and auxiliaries
4	Pump transfer control and safe transfer management in operation, limitations and system protection,
5	Basic principles of pump anatomy and pump maintenance, sealing system and Planned maintenance (PMS) requirements
6	Theory of heat exchanging, heat exchangers, cooling and heating facilitations, superheating. Use of heat exchange in different ship systems (Coolers, heaters, pre-heaters, boilers, superheaters, evaporators, condensation systems)
7	Auxiliary ship systems and use of heat exchanging with liquid circulating methods.
8	Mid-term Application (Understanding of liquid transfer and limitations)
9	Fundamentals of air and gas transfer, piping systems, materials, fittings
10	Production of Compressed air, compressors and auxiliary systems, storage of air and delivery systems
11	Case study 1 Ship main & auxiliary piping systems (water and wastewater systems)
12	Case Study 2 Evaporators, gas compressors, freezing systems, air handling unit
13	Case study 3 Thermal oil systems, Incinerators and separators
14	Maintenance principles of piping, components and related machinery, safe operational procedures of auxiliaries
15	Final Exam Application (Marine auxiliary systems and principles)

Methods and Techniques Used in the Course

Lectures & Theoretical Instruction – Delivery of fundamental knowledge on marine piping, pumps, compressors, and auxiliary systems through classroom teaching.

Laboratory / Practical Applications – Hands-on sessions involving inspection, operation, and maintenance of auxiliary machinery and components (minimum 4 applications).

Case Studies – Analysis of real shipboard auxiliary systems (e.g., water/wastewater, evaporators, refrigeration, separators, incinerators) to strengthen applied understanding.

Group Work & Projects – Collaborative problem-solving tasks to design, evaluate, or troubleshoot auxiliary systems.

Assignments / Homework – Individual tasks to reinforce theoretical knowledge and connect it to real-world ship applications.

Problem-Solving Exercises – Technical calculations and scenario-based questions related to fluid transfer, heat exchange, and system efficiency.

Midterm and Final Exams – Evaluation of students' knowledge and ability to apply concepts to theoretical and practical situations.

Classroom Discussions & Q&A – Active participation and exchange of ideas to deepen understanding of operational procedures and safety aspects.

Sample Questions

Theoretical Questions:

- Explain the main differences between **gate valves, globe valves, and check valves**. In which ship systems are each of these commonly used?
- Define **positive displacement pump** and **centrifugal pump**. Discuss their advantages and limitations in marine auxiliary systems.
- Describe the working principle of a **plate-type heat exchanger**. How does fouling affect its efficiency?
- What are the main safety precautions during **compressed air production and storage** onboard?
- Discuss the importance of **Planned Maintenance Systems (PMS)** in relation to ship auxiliary machinery.

Calculation / Problem-Solving Questions:

- A centrifugal pump is required to deliver 200 m³/h of seawater against a total head of 20 meters. If the pump efficiency is 70% and water density is 1025 kg/m³, calculate the **required power**.
- A boiler feedwater heater uses a shell-and-tube heat exchanger. If seawater enters at 20°C and leaves at 35°C while the flow rate is 30 tons/hour, calculate the **heat absorbed** (assume $C_p = 4.18 \text{ kJ/kg}\cdot\text{K}$).
- A ship's compressed air receiver has a volume of 3 m³ and is charged to 30 bar at 25°C. Calculate the **mass of air stored** (assume ideal gas, $R = 287 \text{ J/kg}\cdot\text{K}$).

Case Study / Application Questions:

- During operation, an auxiliary seawater pump shows reduced flow rate and unusual vibration. List the possible causes and the corrective actions that should be taken.
- The cooling water system of a main engine is showing rising outlet temperatures. How would you troubleshoot the system considering pumps, heat exchangers, and piping components?
- A ship's evaporator system is not producing sufficient fresh water. Explain how you would systematically investigate the fault.
- Compare the operational challenges of **incinerators** and **separators** on board. Suggest safe operational practices for both.

Materials Used in the Course

Primary References / Textbooks:

- *Marine Auxiliary Machinery* – H.D. McGeorge, Elsevier/Butterworth-Heinemann.
- *Introduction to Marine Engineering* – D.A. Taylor, Butterworth-Heinemann.
- *Marine Engineering Practice (Volumes 1 & 2)* – Institute of Marine Engineers.
- *Marine Auxiliary Machinery and Systems* – Richard P. Turton.

Supplementary Resources:

- Manufacturer manuals and technical documentation of pumps, compressors, heat exchangers, and piping systems used on board ships.
- International Maritime Organization (IMO) conventions and codes (e.g., SOLAS, MARPOL) relevant to auxiliary machinery operation and safety.
- Planned Maintenance System (PMS) software documentation and case studies.
- Class society rules (e.g., Lloyd's Register, DNV, ABS) for marine piping and auxiliary systems.

Practical and Laboratory Materials:

- Demonstration units of centrifugal and reciprocating pumps.
- Cutaway models of different valve types (gate, globe, butterfly, check valves).
- Heat exchanger and evaporator training rigs.
- Air compressor and auxiliary piping system simulation kits.
- Measurement and testing equipment: pressure gauges, flow meters, thermometers, vibration analyzers.

Digital / Multimedia Materials:

- Educational videos and animations explaining pump operation, heat exchangers, compressors, and piping arrangements.
- Computer-based simulation software for piping systems, pump performance, and heat exchanger analysis.
- E-learning modules and case studies on troubleshooting auxiliary machinery failures.

Classroom Materials:

- Lecture slides and handouts prepared by the instructor.
- Technical drawings, piping diagrams, and system schematics.
- Problem sets, calculation exercises, and case study worksheets.

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	3	2
PO2	1	1	2	2	1	2
PO3	2	2	2	1	2	2
PO4	1	1	1	1	2	3
PO5	3	1	3	2	2	2
PO6	2	2	2	2	3	2
PO7	1	1	1	1	1	1
PO8	1	1	1	1	0	1
PO9	1	1	1	1	1	1
PO10	1	1	2	3	3	2
PO11	1	1	1	1	1	1
PO12	1	1	1	1	1	1

Course Learning Outcomes/ Evaluation Method		
CLO	Teaching Method (Öğretim Yöntemi)	Assessment Method (Değerlendirme Yöntemi)
CLO1 – Knowledge & Understanding	Lectures, Demonstrations, Multimedia Presentations	Written Exams, Quizzes, Oral Tests
CLO2 – Application of Knowledge	Laboratory Sessions, Workshops, Hands-on Exercises	Practical Exams, Assignments, Lab Reports
CLO3 – Analytical & Technical Skills	Case Studies, Simulations, Technical Workshops	Problem-Solving Exercises, Reports, Presentations
CLO4 – Evaluation & Critical Thinking	Group Discussions, Case Analysis, Scenario-Based Learning	Case Study Reports, Critical Essays, Oral Presentations
CLO5 – Teamwork & Communication	Group Projects, Team-Based Practical Exercises, Peer Learning	Group Project Reports, Peer Assessment, Presentations
CLO6 – Problem-Solving & Decision-Making	Problem-Based Learning, Simulations, Scenario Exercises	Practical Problem-Solving Tasks, Decision-Making Reports, Project Evaluation

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Preparation for lectures	15	1	15
Lectures	15	4	60
Midterm Exam	1	1	1
Preparation for Midterm Exam	1	4	4
Final Exam	1	1	1
Preparation for Final Exam	1	4	4
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Case Studies / Critical Thinking	-	-	-
Project Writing	-	-	-
Group Work	1	3	3
In-class Discussion(s)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory / Practical Applications	4	4	16
Assignment(s)/Homework/Class Works	2	4	8
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			112
ECTS Credit			3

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	4	20
Field Work	1	5
Special Course Internship (Work Placement)	-	-
Homework/Assignments	2	10
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	1	5
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	30
Total	10	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus

Course name: Introduction to Yachting II

Code	Year	Semester	Credit	ECTS	Course application, Hour/Week				
					Theoretical	Application	Laboratory		
MMD102	I	Spring	3	5	2	2	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 14:30 – 17:20							
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	<p><i>Introduction to Yachting II</i> builds upon the foundational knowledge gained in <i>Introduction to Yachting I</i> and focuses on advanced professional, operational, and social aspects of the yachting industry. The course emphasizes the development of practical skills, professional behaviors, and operational competence required to work effectively onboard private and commercial yachts.</p> <p>Students will explore human relations, team dynamics, and social etiquette onboard, including maritime customs, guest service standards, and interpersonal communication with international crews and guests. The course also introduces specialized maritime English and yacht-specific terminology to ensure clear, professional communication in operational settings.</p> <p>In addition, students will examine crew hiring processes, contract types, personnel management, and insurance considerations, equipping them with knowledge of legal, regulatory, and professional requirements. The course further addresses yacht navigation, maneuvering techniques in marinas, anchorages, and open waters, as well as the proper allocation of duties and operational responsibilities during complex onboard operations.</p> <p>By the end of the course, students will have acquired the theoretical knowledge, practical understanding, and professional skills necessary to operate safely, efficiently, and respectfully within the yachting environment, preparing them for advanced yachting studies or entry-level positions in the industry.</p>
Course Aims and Objectives	<p>The primary aim of <i>Introduction to Yachting II</i> is to develop students' professional competence, operational knowledge, and interpersonal skills required for effective functioning onboard private and commercial yachts. The course builds on foundational yachting knowledge and emphasizes practical application, maritime etiquette, crew management, navigation principles, and professional standards, preparing students for real-world yachting operations and advanced study.</p> <ul style="list-style-type: none"> Demonstrate professional behavior and interpersonal skills required for working effectively as part of a yacht crew. Apply maritime customs, etiquette, and social protocols in interactions with guests, crew, and marina personnel. Communicate accurately using maritime English and yacht-specific terminology, both verbally and in writing.

	<ul style="list-style-type: none"> Understand and engage in crew hiring processes, contracts, and personnel management, including insurance and legal requirements. Demonstrate knowledge of yacht operational procedures, including duty allocation and coordination during onboard tasks. Explain navigation principles and maneuvering techniques applicable in marinas, anchorages, and coastal waters. Apply safe and efficient anchoring, docking, and mooring techniques in diverse operational environments. Identify the roles and responsibilities of all crew positions and understand hierarchy in seasonal and annual charter yachts. Integrate theoretical knowledge with practical scenarios to solve operational and hospitality-related challenges onboard. Prepare students for entry-level professional roles in the yachting industry and advanced yachting education.
Course Learning Outcomes	<p>LO1 Demonstrate professional behavior, teamwork, and effective interpersonal skills.</p> <p>LO2 Apply maritime customs, etiquette, and social protocols.</p> <p>LO3 Use maritime English and yacht-specific terminology accurately.</p> <p>LO4 Understand and participate in crew hiring, contracts, and personnel management.</p> <p>LO5 Plan and execute yacht operations efficiently, including delegation of duties.</p> <p>LO6 Demonstrate knowledge of navigation principles and tools.</p> <p>LO7 Apply safe and effective anchoring, docking, and mooring techniques.</p> <p>LO8 Describe roles, responsibilities, and hierarchy of yacht crew positions.</p> <p>LO9 Analyze operational and hospitality scenarios onboard and propose solutions.</p> <p>LO10 Integrate theoretical knowledge with practical skills for professional readiness.</p>

Content of the Course

Week	Subject
1	Human Relations in Yachting <ul style="list-style-type: none"> • Professional communication onboard • Teamwork and conflict management • Cultural sensitivity with international crews
2	Social Etiquette & Maritime Customs <ul style="list-style-type: none"> • Traditional maritime customs • Behavioural rules onboard • Respect for hierarchy and vessel routines
3	Guest Interaction & Hospitality <ul style="list-style-type: none"> • Greeting and welcoming procedures • Guest assistance during embarkation/disembarkation • Communication protocol with VIP guests
4	Personal Appearance & Hygiene Standards <ul style="list-style-type: none"> • Uniform guidelines • Grooming expectations • Hygiene and safety in guest spaces
5	Maritime English I <ul style="list-style-type: none"> • Basic maritime terminology • Standard onboard communication phrases • Radio communication etiquette (intro)
6	Yacht Terminology II <ul style="list-style-type: none"> • Deck terminology • Interior and engineering department terminology • Common yacht-specific commands
7	Professional Development in Yachting <ul style="list-style-type: none"> • CV and résumé preparation for yacht crew • Cover letters and digital profiles • Example formats used internationally
8	Hiring Processes in Yachting <ul style="list-style-type: none"> • Crew agencies • Interview techniques • Reference checks • Contract types (SEA, MLC compliance)
9	Crew Welfare & Insurance <ul style="list-style-type: none"> • Onboard service contracts • Insurance requirements • Seafarer rights and responsibilities
10	Introduction to Yacht Navigation

	<ul style="list-style-type: none"> • Basic navigation concepts • Reading electronic charts • Safety rules (COLREG overview)
11	<p>Yacht Electronic Systems</p> <ul style="list-style-type: none"> • Chartplotters • GPS • Radar basics • AIS, autopilot functions
12	<p>Anchors & Anchoring Techniques</p> <ul style="list-style-type: none"> • Anchor types used on yachts • Anchor handling • Basic anchoring procedures and safety
13	<p>Marina & Mooring Maneuvers</p> <ul style="list-style-type: none"> • Entering and leaving marina berths • Dock line handling • Stern-to and alongside mooring
14	<p>Maneuvering in Bays & Anchorages</p> <ul style="list-style-type: none"> • Approach planning • Wind and current considerations • Communication and teamwork during maneuvers
15	<p>Operational Roles During Maneuvers</p> <ul style="list-style-type: none"> • Duty assignments for deck crew & interior crew • Briefings and debriefings • Final review and practical scenario analysis

Methods and Techniques used in the Course

Lectures and Theoretical Instruction

- Instructor-led presentations
- Conceptual explanations supported by visual materials
- Introduction of core terminology and industry standards

Interactive Classroom Discussions

- Guided discussions on industry practices
- Question-answer sessions to reinforce understanding
- Comparative analysis of yacht types and sector dynamics

Case Studies and Real-World Examples

- Examination of real yacht operations
- Analysis of marina management situations
- Review of maintenance scenarios and professional challenges

Practical Demonstrations (Classroom-Based)

- Demonstration of basic yacht equipment, rigging models, and materials
- Showcasing maintenance tools and examples of onboard systems
- Interior organization and cabin preparation simulations

Visual and Multimedia Learning

- Photographs, diagrams, and technical videos
- Virtual marina and yacht walkthroughs
- Industry documentaries and training clips

Group Activities and Collaborative Learning

- Small-group tasks related to yacht classification, equipment identification, and marina rules
- Problem-solving exercises related to onboard scenarios
- Peer discussion on maritime etiquette and workplace behaviour

Independent Learning and Reading Assignments

- Assigned readings on yacht types, materials, and service practices
- Terminology acquisition exercises
- Short research tasks on global and local yachting sectors

Field Observation (If applicable)

(Optional depending on institutional policy and available facilities)

- Visit to a marina, boatyard, or yacht port
- Observation of vessel types, maintenance areas, and marine infrastructure

Practical Skill Reinforcement

- Hands-on practice with knots, safety routines, basic deckhand skills (if applicable)
- Interior organization practice using provided materials
- Preparation for real-life yachting operations

Sample Questions

Multiple-Choice Questions (MCQs)

- Which of the following is the correct hierarchy onboard a large charter yacht?
 - a) Deckhand → Chief Officer → Captain → Stewardess
 - b) Captain → Chief Officer → Deckhand → Steward/Stewardess
 - c) Stewardess → Captain → Deckhand → Chief Officer
 - d) Captain → Deckhand → Chief Engineer → Steward
- What is the primary purpose of maritime etiquette onboard a yacht?
 - a) To enforce strict discipline only
 - b) To ensure safe, efficient, and professional interaction among crew and guests
 - c) To reduce fuel consumption
 - d) To increase onboard speed
- When docking in a busy marina, the captain orders a stern-to maneuver. Which crew members are primarily responsible for line handling?
 - a) Interior crew only
 - b) Deck crew
 - c) Engine crew
 - d) Guests
- Which of the following is NOT typically included in a yacht crew contract?
 - a) Insurance coverage
 - b) Duty assignments and hours
 - c) Guest meal preferences
 - d) Salary and leave entitlement
- Which navigation tool provides real-time vessel positioning using satellites?
 - a) Compass
 - b) Radar
 - c) GPS
 - d) Sextant

Short Answer Questions

- Explain the difference between a seasonal charter yacht and an annual charter yacht in terms of operations and crew requirements.
- List three key professional behaviors expected of yacht crew when interacting with guests.
- Describe one scenario where maritime English communication is critical onboard.
- What are the main responsibilities of a chief steward/stewardess during a guest service operation?
- Name two common safety considerations when performing a docking maneuver in a crowded marina.

Long-Form / Essay Questions

- Discuss the importance of teamwork and hierarchy onboard yachts and provide examples of potential challenges if roles are misunderstood.

- Analyze the process of hiring crew for a private vs. commercial yacht, including contracts, insurance, and legal requirements.
- Explain how proper anchoring and mooring techniques contribute to safety and operational efficiency.
- Evaluate the role of professional etiquette and guest service in maintaining a yacht's reputation and client satisfaction.
- Compare the advantages and limitations of electronic navigation tools versus traditional navigation methods.

Scenario-Based / Practical Questions

- You are the deckhand assigned to assist with docking a 30-meter charter yacht in a busy marina. Outline the steps you would take, including line handling and communication with the captain.
- A VIP guest requests a special cabin setup. How would you coordinate with the interior team to ensure professional standards and timely completion?
- During anchoring, the anchor fails to hold. What steps should the crew take to secure the yacht safely?
- You are assisting in a crew interview. What questions would you ask to evaluate the candidate's maritime professionalism and teamwork skills?
- A guest reports a minor onboard injury. Describe the immediate response and follow-up procedures for safety and guest satisfaction.

True/False Questions

- **T/F:** Seasonal charter yachts typically operate for only a few months each year, requiring temporary crew.
- **T/F:** Deck crew are primarily responsible for navigation planning and interior cleaning.
- **T/F:** Maritime English is only necessary for the captain and senior officers.
- **T/F:** Professional etiquette onboard includes respecting guest privacy and maintaining a clean, organized environment.
- **T/F:** Anchoring in a crowded bay does not require communication between crew members.

Materials Used in the Course

Primary Textbooks

- **Davis, R.** *Yacht Operations and Crew Management*. Marine Skills Publishing.
- **Ward, J.** *The Superyacht Industry: Professional Standards and Operations*. Seatrade Communications.
- **Gerr, D.** *The Nature of Boats: Insights for Crew and Operators*. International Marine.

Recommended References

- **Royal Yachting Association (RYA)** – *RYA Day Skipper, Competent Crew, and Yacht Service Manuals*.
- **Chapman, C.** *Chapman Piloting & Seamanship*. Hearst Marine Books.
- **Gerr, D.** *The Elements of Boat Strength for Builders, Designers, and Owners*. International Marine.
- **Macleod, P.** *The Insider's Guide to Superyachts*. Adlard Coles Nautical.
- **Ward, J.** *Professional Yacht Crew Handbook*. Seatrade Publications.

Industry Standards and Technical Resources

- **Maritime & Coastguard Agency (MCA)** – *Large Commercial Yacht Code (LY3/LY4)*
- **International Safety Management (ISM) Code** – Safety procedures for commercial vessels
- **ISO Standards for Small Craft and Recreational Boats** – Construction, safety, and operational guidelines

Supplementary Learning Materials

- RYA Marine Radio Handbook – VHF communication standards
- Superyacht Times / Boat International – Industry reports and news
- Online maritime English and yacht-specific terminology resources

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	Teaching Method	Assessment Method
LO1 Demonstrate professional behavior, teamwork, and effective interpersonal skills.	Lectures, group activities, role-playing, simulations	Participation assessment, peer evaluation, practical observation
LO2 Apply maritime customs, etiquette, and social protocols.	Lectures, demonstrations, multimedia examples, discussions	Quizzes, scenario-based assignments, practical evaluation
LO3 Use maritime English and yacht-specific terminology accurately.	Lectures, language exercises, interactive discussions	Quizzes, oral exams, written assignments
LO4 Understand and participate in crew hiring, contracts, and personnel management.	Lectures, case studies, document analysis	Written assignments, quizzes, short essays
LO5 Plan and execute yacht operations efficiently, including delegation of duties.	Simulations, group exercises, scenario-based learning	Practical assessment, performance evaluation, case studies
LO6 Demonstrate knowledge of navigation principles and tools.	Lectures, multimedia demonstrations, practical exercises	Quizzes, practical exercises, scenario-based assessments
LO7 Apply safe and effective anchoring, docking, and mooring techniques.	Practical demonstrations, videos, simulations	Practical assessment, observation, scenario evaluation
LO8 Describe roles, responsibilities, and hierarchy of yacht crew positions.	Lectures, group discussions, case studies	Quizzes, written assignments, short essays
LO9 Analyze operational and hospitality scenarios onboard and propose solutions.	Case studies, role-playing, group discussions	Scenario-based assessments, oral presentations
LO10 Integrate theoretical knowledge with practical skills for professional readiness.	Simulations, field exercises, practical demonstrations	Final practical assessment, comprehensive project, performance evaluation

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Preparation for lectures	15	1	15
Lectures	15	3	45
Midterm Exam	1	2	2
Preparation for Midterm Exam	1	20	20
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	30	30
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			149
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	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

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus

Course name: Physics for Mariners II							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
MPH102	I	Spring	4	4	3	0	2
Course type: Compulsory			Prerequisite: x		Language: English		
% Contribution to the Professional Fundamental Component			Basic Sciences	Engineering Science	Engineering Design	General Education	
			50	30	-	20	
Course Venue and Time			Wednesday 12.30-16.20				
Instructor information			Assist. Prof. Dr. Engin Ata Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4060 engin.ata@kyrenia.edu.tr www.kyrenia.edu.tr				

Course Description	<p>This course builds upon foundational physics concepts and emphasizes their applications in maritime and navigational contexts. Students will explore advanced topics in electricity, magnetism, and optics, integrating theoretical understanding with practical examples relevant to shipboard systems and marine technology.</p> <p>The course begins with a review of electric fields, flux, and potential, introducing capacitance and dielectric materials, followed by the analysis of current, resistance, and DC circuits. Students will learn to design and evaluate simple electrical circuits and understand the behavior of components under various conditions.</p> <p>The second part of the course covers magnetic fields, the sources and effects of magnetism, Faraday's law, and inductance, extending to AC circuits and the principles of electromagnetic waves. Applications of these principles in marine navigation, communication, and energy systems will be emphasized.</p> <p>In the latter part of the course, students will study the principles of ray optics, image formation, wave optics, diffraction, and polarization, providing insights into optical systems used onboard ships and in maritime instrumentation. Finally, the course introduces basic concepts of relativity to develop an appreciation of modern physical principles and their implications for high-precision measurements.</p> <p>Laboratory sessions, exercises, and case studies will reinforce theoretical knowledge, develop problem-solving skills, and illustrate real-world maritime applications. Assessment includes a combination of midterm exams, laboratory work, and a final exam.</p>
	<p>Course Aims:</p> <p>The aim of this course is to provide students with an in-depth understanding of advanced physics concepts, particularly in electricity, magnetism, and optics, with a focus on their practical applications in maritime environments. The course seeks to strengthen analytical thinking, problem-solving, and the ability to apply physical principles to shipboard systems, navigation, and marine technology.</p> <p>Course Objectives:</p> <p>By the end of the course, students should be able to:</p> <ul style="list-style-type: none"> Understand and apply concepts of electric fields, potential, capacitance, and dielectric materials in marine systems. Analyze current, resistance, and DC circuits, and understand the practical implications for shipboard electrical systems. Explain magnetic fields, Faraday's law, inductance, and AC circuits, and apply these principles to maritime instrumentation and electrical machinery.

	<ul style="list-style-type: none"> Understand the properties and behavior of electromagnetic waves and their applications in communication and navigation systems. Apply principles of ray optics, wave optics, diffraction, and polarization to optical devices used in maritime operations. Recognize the relevance of relativistic concepts to high-precision measurements and advanced navigational systems. Develop problem-solving skills by integrating theory with laboratory experiments and practical maritime applications.
Course Learning Outcomes	<p>CLO1 – Electric Fields and Potential: Explain and apply the principles of electric fields, electric flux, and electric potential in marine electrical systems.</p> <p>CLO2 – Capacitors and Dielectrics: Analyze capacitors, dielectrics, and their applications in shipboard electrical circuits.</p> <p>CLO3 – DC Circuits and Ohm's Law: Solve problems related to current, resistance, and direct current (DC) circuits in maritime electrical equipment.</p> <p>CLO4 – Magnetic Fields and Induction: Interpret and apply Faraday's law, magnetic fields, and inductance to practical maritime scenarios.</p> <p>CLO5 – AC Circuits and Electromagnetic Waves: Analyze alternating current (AC) circuits and electromagnetic waves relevant to shipboard communication and navigation systems.</p> <p>CLO6 – Optics – Ray and Wave Principles: Apply ray optics and wave optics principles to shipboard optical instruments and measurements.</p> <p>CLO7 – Diffraction, Interference, and Polarization: Understand and interpret diffraction, interference, and polarization effects in maritime applications.</p> <p>CLO8 – Special Relativity Concepts: Explain basic concepts of special relativity and their relevance to precision measurements and instrumentation at sea.</p> <p>CLO9 – Laboratory Skills and Experimental Analysis: Conduct laboratory experiments safely, record data accurately, and correlate experimental results with theoretical predictions.</p> <p>CLO10 – Integrated Problem Solving: Integrate theoretical knowledge with practical maritime applications to solve real-world engineering and operational problems onboard ships.</p>

Content of the Course

Week	Subject
1	Introduction, Electric field, flux and potential
2	Capacitance and dielectrics
3	Current and resistance
4	DC circuits
5	Midterm Exam
6	Magnetic fields, sources of magnetic fields
7	Faraday's law and Inductance
8	AC circuits
9	Electromagnetic waves
10	Midterm Exam
11	Principles of ray optics and image formation
12	Wave optics
13	Diffraction patterns and Polarization
14	Relativity
15	Final Exam

Methods and Techniques used in the Course

Lectures:

- Structured classroom lectures covering fundamental physics concepts and maritime applications.
- Use of diagrams, animations, and simulations to visualize electric, magnetic, and optical phenomena.

Laboratory Applications:

- Hands-on experiments to measure voltage, current, magnetic fields, and wave properties.
- Verification of theoretical concepts through practical work with shipboard-relevant equipment.

Problem-Based Learning (PBL):

- Solving applied physics problems related to ship systems, navigation, and communication.
- Emphasis on calculations for circuits, fields, and optics.

Case Studies:

- Real-life maritime scenarios for AC/DC circuits, electromagnetic waves, and optical systems.
- Analysis of practical engineering challenges on ships.

Group Work:

- Collaborative exercises in laboratory and problem-solving sessions.
- Application of theoretical knowledge to team-based projects.

Simulation Tools and Software:

- Use of simulation software for electrical circuits, wave propagation, and optics.
- Visualization of electromagnetic and optical behaviors.

Quizzes and In-Class Exercises:

- Regular short quizzes to reinforce understanding.
- In-class problem-solving to engage students actively.

Homework and Assignments:

- Individual exercises reinforcing lecture and lab material.
- Numerical problems, derivations, and conceptual questions.

Midterm and Final Examinations:

- Combination of theoretical questions and problem-solving exercises.
- Application of concepts to realistic maritime scenarios.

Sample Questions

Electric Fields and Capacitance

- Calculate the electric field at a point 2 m from a point charge of $5 \mu\text{C}$.
- A parallel-plate capacitor has a plate area of 0.5 m^2 and a separation of 2 mm. Find its capacitance in vacuum.
- Explain how dielectrics improve the performance of shipboard capacitors.

Current, Resistance, and DC Circuits

- Determine the total resistance of a series-parallel network with resistors: 5Ω , 10Ω , 15Ω .
- A shipboard DC circuit draws 10 A at 24 V. Calculate the power consumed.
- Discuss precautions for preventing short circuits in maritime electrical systems.

Magnetic Fields and Induction

- Calculate the magnetic force on a 2 m long wire carrying 5 A current in a 0.3 T magnetic field.
- A coil with 50 turns experiences a change in flux of 0.02 Wb in 0.1 s . Find the induced EMF.
- Explain the significance of Faraday's Law for shipboard generators.

AC Circuits and Electromagnetic Waves

- For an AC circuit with $R = 10 \Omega$, $L = 0.05 \text{ H}$, and $C = 100 \mu\text{F}$ at 50 Hz, calculate the impedance.
- Discuss the importance of electromagnetic wave propagation for ship communication.
- Sketch the waveform of a sinusoidal AC voltage and indicate peak, RMS, and frequency.

Ray and Wave Optics

- Determine the image location for a concave mirror with focal length 20 cm when an object is 30 cm away.
- Explain constructive and destructive interference using the double-slit experiment.
- Describe how polarization can improve navigational instruments on ships.

Diffraction, Polarization, and Relativity

- A diffraction grating has 5000 lines/cm. Calculate the angle for the first-order maximum of light with $\lambda = 600 \text{ nm}$.
- Explain the effect of relativistic time dilation on satellite-based navigation systems.
- Describe a scenario on a ship where diffraction or polarization phenomena may be observed.

Materials Used in the Course

Textbooks & Reference Books

- Serway, R.A. & Jewett, J.W., *Physics for Scientists and Engineers*, 10th Edition, Cengage.
- Halliday, D., Resnick, R., & Walker, J., *Fundamentals of Physics*, 11th Edition, Wiley.
- Tipler, P.A., & Mosca, G., *Physics for Scientists and Engineers*, 6th Edition, W.H. Freeman.
- Kinsler, L.E., Frey, A.R., Coppens, A.B., & Sanders, J.V., *Fundamentals of Acoustics*, 4th Edition.

Lecture Notes & Online Resources

- Instructor-prepared lecture slides and notes
- MIT OpenCourseWare: Electricity & Magnetism, Waves, Optics
- Interactive simulations (PhET Physics Simulations) for electric circuits, magnetic fields, wave interference, and diffraction

Laboratory Materials & Equipment

- Power supply units (DC and AC)
- Multimeters and ammeters
- Resistors, capacitors, inductors
- Helmholtz coils and magnetic field sensors
- Optical bench, lenses, mirrors, and diffraction gratings
- Oscilloscope and function generators
- Laser and light sources for wave optics experiments
- Polarizers and prisms for polarization studies

Software & Tools

- MATLAB or Python for numerical simulations of circuits and wave phenomena
- Circuit simulators (e.g., LTSpice, TINA-TI)
- Spreadsheet software for data collection, plotting, and analysis

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	2	3	2	2	2	2	2	
PO2	1	1	2	2	1	2	2	2	3	2	
PO3	2	2	2	1	2	2	3	3	2	2	
PO4	1	1	1	1	2	3	3	1	1	2	
PO5	3	1	3	2	2	2	2	2	3	2	
PO6	2	2	2	2	3	2	3	2	2	2	
PO7	1	1	1	1	1	1	1	1	1	1	
PO8	1	1	1	1	0	1	1	1	1	1	
PO9	1	1	1	1	1	1	1	1	0	1	
PO10	1	1	2	3	3	2	1	1	1	3	
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 – Electric Fields and Potential	Lecture, Multimedia Presentation, Guided Exercises	Quizzes, Midterm Exam, Assignments
CLO2 – Capacitors and Dielectrics	Lecture, Problem-Solving Exercises, Lab Demonstration	Lab Reports, Quizzes, Assignments
CLO3 – DC Circuits and Ohm's Law	Lecture, Tutorials, Hands-on Circuit Practice	Lab Reports, Practical Exams, Quizzes
CLO4 – Magnetic Fields and Induction	Lecture, Case Studies, Lab Experiments	Lab Reports, Midterm Exam, Assignments
CLO5 – AC Circuits and Electromagnetic Waves	Lecture, Simulation, Problem-Solving Exercises	Lab Reports, Practical Exams, Assignments
CLO6 – Optics – Ray and Wave Principles	Lecture, Demonstration, Hands-on Experiments	Lab Reports, Quizzes, Practical Exercises
CLO7 – Diffraction, Interference, Polarization	Lecture, Guided Experiments, Simulations	Lab Reports, Assignments, Quizzes
CLO8 – Special Relativity Concepts	Lecture, Case Studies, Problem-Solving	Quizzes, Assignments, Midterm Exam
CLO9 – Laboratory Skills and Experimental Analysis	Hands-on Lab, Data Recording, Safety Training	Lab Reports, Observations, Practical Exams
CLO10 – Integrated Problem Solving	Scenario-Based Exercises, Projects, Group Work	Project Reports, Practical Exams, Assignments

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Preparation for lectures	15	2	30
Lectures	15	4	60
Midterm Exam	1	2	2
Preparation for Midterm Exam	1	6	6
Final Exam	1	2	2
Preparation for Final Exam	1	6	6
Presentation(s)	-	-	-
Preparation for Presentation(s)	-	-	-
Case Studies / Critical Thinking	-	-	-
Project Writing	-	-	-
Group Work	1	4	4
In-class Discussion(s)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory / Practical Applications	2	4	8
Assignment(s)/Homework/Class Works	4	4	16
Preparation for laboratory sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
In-class discussions / Q&A sessions	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			134
ECTS Credit			4

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	2	10
Application	-	-
Field Work	1	10
Special Course Internship (Work Placement)	-	-
Homework/Assignments	4	20
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	30
Total	9	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus



Course name: Calculus II							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
MTH102	I	Spring	4	6	4	0	0
Course type: Compulsory			Prerequisite: x			Language: English	
% Contribution to the Professional Fundamental Component			Basic Sciences	Engineering Science	Engineering Design	General Education	
			50	-	-	50	
Course Venue and Time			Wednesday 12.30-16.20				
Instructor information			Assist. Prof. Dr. Engin Ata Faculty of Maritime Studies Wednesday / 09:00 - 12:00 +90 (392) 650 26 00 / 4060 engin.ata@kyrenia.edu.tr www.kyrenia.edu.tr				

Course Description	<p>This course provides an in-depth study of advanced mathematical concepts building upon Calculus I. Topics include geometry, area and volume calculations, trigonometry, complex numbers, measurement and uncertainty, vectors, conic sections, and the use of mathematical tables. Emphasis is placed on practical applications in engineering, physics, navigation, and problem-solving. Students will develop analytical skills and the ability to apply mathematical methods to real-world problems, preparing them for further studies in mathematics, science, and engineering disciplines.</p>
Course Aims and Objectives	<p>The course aims to deepen students' understanding of mathematical concepts introduced in Calculus I, providing them with the tools and techniques to solve complex problems in mathematics, physics, engineering, and related disciplines. It emphasizes the practical application of advanced calculus, analytical thinking, and problem-solving skills.</p> <ul style="list-style-type: none"> • Apply geometric principles to calculate areas, volumes, and other spatial properties. • Solve problems using trigonometry, including spherical trigonometry. • Work confidently with complex numbers in mathematical and applied contexts. • Understand measurement techniques and evaluate uncertainties in calculations. • Utilize vectors in solving multidimensional problems. • Analyze and solve problems involving conic sections such as ellipses and hyperbolas. • Use mathematical tables effectively for computation and problem-solving. • Develop logical reasoning and analytical skills for advanced mathematical applications.
Course Learning Outcomes	<p>CLO1 – Areas and Volumes: Calculate areas and volumes using advanced geometric techniques and integration methods.</p> <p>CLO2 – Trigonometry and Spherical Trigonometry: Solve trigonometric and spherical trigonometry problems relevant to practical engineering and scientific applications.</p> <p>CLO3 – Complex Numbers: Perform operations with complex numbers and apply them to mathematical and engineering problems.</p> <p>CLO4 – Measurement and Uncertainty: Apply principles of measurement and quantify uncertainties in real-world calculations.</p> <p>CLO5 – Vector Analysis: Utilize vectors to analyze and solve problems in two- and three-dimensional spaces.</p> <p>CLO6 – Conic Sections: Analyze and work with conic sections, including ellipses, hyperbolas, and parabolas, in applied contexts.</p> <p>CLO7 – Mathematical Tables and Functions: Interpret and use mathematical tables for logarithmic, trigonometric, and other functions in problem-solving.</p> <p>CLO8 – Logical Reasoning and Critical Thinking: Demonstrate logical reasoning and critical thinking in solving advanced calculus and applied mathematics problems.</p>

CLO9 – Integration of Mathematical Knowledge: Integrate knowledge from different mathematical areas to model, analyze, and solve applied engineering and scientific problems.

CLO10 – Applied Problem Solving: Apply mathematical tools and techniques to develop solutions for real-world engineering, technological, and scientific challenges.

Content of the Course

Week	Subject
1	Geometry Review and Basics <ul style="list-style-type: none"> • Fundamental concepts of geometry • Points, lines, planes, and angles • Distance, midpoint, and section formulas
2	Area and Volume Calculations <ul style="list-style-type: none"> • Calculation of areas of plane figures • Volume of solids: prisms, cylinders, cones, spheres • Applications in physical problems
3	Trigonometry I <ul style="list-style-type: none"> • Trigonometric functions and identities • Solving basic triangles • Applications in calculus
4	Trigonometry II and Spherical Trigonometry <ul style="list-style-type: none"> • Law of sines and law of cosines • Spherical triangles and their properties • Applications in navigation and astronomy
5	Complex Numbers I <ul style="list-style-type: none"> • Definition and representation of complex numbers • Algebraic operations: addition, subtraction, multiplication, division • Polar form of complex numbers
6	Complex Numbers II <ul style="list-style-type: none"> • Powers and roots of complex numbers • De Moivre's theorem • Applications in engineering and physics
7	Measurement and Units <ul style="list-style-type: none"> • Systems of measurement • Conversion between units • Dimensional analysis
8	Measurement Uncertainty <ul style="list-style-type: none"> • Sources of measurement errors • Absolute and relative uncertainties • Propagation of errors in calculations
9	Mathematical Tables and Tools <ul style="list-style-type: none"> • Use of mathematical tables for logarithms, trigonometry, and exponentials • Applications in solving real-world problems • Approximations and rounding
10	Vectors I <ul style="list-style-type: none"> • Definition and basic operations: addition, subtraction, scalar multiplication

	<ul style="list-style-type: none"> • Dot product and cross product • Geometric interpretation
11	Vectors II <ul style="list-style-type: none"> • Applications of vectors in geometry and physics • Lines and planes in vector form • Vector calculus fundamentals
12	Conic Sections: Ellipses <ul style="list-style-type: none"> • Standard equations of ellipses • Properties and foci • Applications in physics and engineering
13	Conic Sections: Hyperbolas <ul style="list-style-type: none"> • Standard equations of hyperbolas • Properties and asymptotes • Applications in navigation and orbits
14	Applications of Calculus in Geometry <ul style="list-style-type: none"> • Using calculus to compute areas and volumes • Surface area and arc length • Optimization problems in geometry
15	Review and Integration of Topics <ul style="list-style-type: none"> • Summary of all topics • Problem-solving sessions • Preparation for final exams

Methods and Techniques used in the Course

Lectures – Structured presentations to introduce and explain theoretical concepts and problem-solving techniques.

Interactive Problem-Solving Sessions – Step-by-step guidance on exercises, focusing on practical application of formulas and methods.

Group Discussions and Peer Learning – Collaborative learning to enhance understanding of complex topics such as vectors, conic sections, and spherical trigonometry.

Mathematical Software Tools – Use of calculators, MATLAB, or similar software to perform complex computations and visualize functions.

Worked Examples and Case Studies – Realistic problems from physics, engineering, and navigation to connect theory with practice.

Homework Assignments – Regular exercises to reinforce concepts and develop problem-solving skills.

Quizzes and Formative Assessments – Short assessments to track comprehension and provide feedback for improvement.

Demonstrations – Step-by-step demonstrations of geometric constructions, vector operations, and use of mathematical tables.

Sample Questions

Geometry & Measurement

- Calculate the area of a triangle given its vertices in 3D space.
- Determine the volume of a solid obtained by rotating a given function around the x-axis.

Trigonometry & Spherical Trigonometry

- Solve for missing sides and angles of a right-angled triangle using trigonometric identities.
- Given three points on a sphere, compute the spherical triangle area.

Complex Numbers

- Simplify $(3 + 4i)^2$ and represent the result in polar form.
- Solve $z^2 + 1 = 0$ for complex solutions.

Vectors

- Find the magnitude and direction of the resultant vector given $\vec{A} = 2\hat{i} + 3\hat{j}$ and $\vec{B} = -\hat{i} + 4\hat{j}$.
- Calculate the dot product and cross product of two vectors.

Ellipse & Hyperbola

- Determine the foci of the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$.
- Find the vertices and asymptotes of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$.

Error & Uncertainty in Measurement

- A measurement of $5.2 \text{ m} \pm 0.1 \text{ m}$ is recorded. Calculate the relative and percentage uncertainty.

Use of Mathematical Tables

- Using a logarithmic table, evaluate $\log 5.67$.
- Solve $\sin 45^\circ$ and $\tan 30^\circ$ using trigonometric tables.

Materials Used in the Course

Textbooks & Reference Books

- Calculus textbooks covering geometry, trigonometry, complex numbers, vectors, and conic sections.
- Mathematical tables for logarithms, trigonometric functions, and other reference tables.
- Manuals on measurement, error analysis, and spherical trigonometry.

Software & Tools

- Graphing calculators for visualizing functions, vectors, and conic sections.
- Computer algebra systems (e.g., MATLAB, Mathematica, or GeoGebra) for calculations and modeling.

Supplementary Materials

- Lecture notes and handouts provided by the instructor.
- Problem sets and solution manuals for practice.
- Online resources and interactive modules for geometry, vectors, and trigonometry.

Practical Tools

- Rulers, compasses, and protractors for geometric constructions.
- Measuring instruments for practical exercises in error analysis.
- Visual aids such as charts and 3D models to illustrate complex numbers, vectors, and conic sections.

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	2	3	2	2	2	2	2
PO2	1	1	2	2	1	2	2	2	3	2
PO3	2	2	2	1	2	2	3	3	2	2
PO4	1	1	1	1	2	3	3	1	1	2
PO5	3	1	3	2	2	2	2	2	3	2
PO6	2	2	2	2	3	2	3	2	2	2
PO7	1	1	1	1	1	1	1	1	1	1
PO8	1	1	1	1	0	1	1	1	1	1
PO9	1	1	1	1	1	1	1	1	0	1
PO10	1	1	2	3	3	2	1	1	1	3
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 – Areas and Volumes	Lecture, Problem-Solving Exercises, Tutorials	Quizzes, Assignments, Midterm Exam
CLO2 – Trigonometry and Spherical Trigonometry	Lecture, Guided Exercises, Hands-on Practice	Quizzes, Assignments, Practical Exercises
CLO3 – Complex Numbers	Lecture, Tutorials, Problem-Solving	Quizzes, Assignments, Midterm Exam
CLO4 – Measurement and Uncertainty	Lecture, Demonstrations, Hands-on Calculations	Lab Reports, Quizzes, Assignments
CLO5 – Vector Analysis	Lecture, Tutorials, Problem-Solving Sessions	Quizzes, Assignments, Midterm Exam
CLO6 – Conic Sections	Lecture, Guided Exercises, Case Studies	Quizzes, Assignments, Practical Problems
CLO7 – Mathematical Tables and Functions	Lecture, Tutorials, Exercises	Quizzes, Assignments, Midterm Exam
CLO8 – Logical Reasoning and Critical Thinking	Problem-Solving Sessions, Case Studies, Group Work	Assignments, Quizzes, Midterm Exam
CLO9 – Integration of Mathematical Knowledge	Lecture, Integrated Exercises, Projects	Project Work, Assignments, Practical Exams
CLO10 – Applied Problem Solving	Scenario-Based Exercises, Group Projects, Case Studies	Project Work, Assignments, Practical Exams

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Preparation for lectures	15	2	30
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)	-	-	-
Case Studies / Critical Thinking	-	-	-
Project Writing	-	-	-
Group Work	1	10	10
In-class Discussion(s)	-	-	-
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory / Practical Applications	2	10	20
Assignment(s)/Homework/Class Works	4	10	40
Preparation for laboratory sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
In-class discussions / Q&A sessions	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			184
ECTS Credit			6

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	2	10
Application	-	-
Field Work	1	10
Special Course Internship (Work Placement)	-	-
Homework/Assignments	4	20
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	30
Final/Oral Exams	1	30
Total	9	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus

Course name: Navigation II							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
NAV102	I	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	
			60	-	-	40	
Course Venue and Time			Wednesday 14.30-17.20				
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	<p>Navigation II expands on the principles learned in Navigation I, covering advanced coastal and open-sea navigation techniques. Topics include aids to navigation, lighthouses, buoys, depth measurement, speed and dead reckoning, tidal and current calculations, and voyage planning. Students will also learn to integrate electronic and traditional navigation methods, apply tidal corrections, and plan safe voyages under varying environmental conditions.</p>
Course Aims and Objectives	<p>Aims:</p> <ul style="list-style-type: none"> • To provide students with advanced knowledge and practical skills in coastal and open-sea navigation. • To develop students' ability to integrate traditional and electronic navigation methods for safe and efficient voyage planning. • To enhance understanding of tidal, current, and environmental effects on navigation and their application in real-life maritime operations. • To prepare students to make informed decisions on bridge resource management and navigation safety. <p>Objectives:</p> <ul style="list-style-type: none"> • To familiarize students with aids to navigation, lighthouses, buoyage systems, and radio navigation tools. • To teach depth measurement techniques using manual and electronic methods. • To train students in speed measurement, dead reckoning (DR) navigation, and correction of courses for currents and tides. • To develop the ability to interpret tidal tables, current charts, and tidal atlases for voyage planning. • To integrate navigation knowledge into practical chart work, simulation exercises, and case studies.
Course Learning Outcomes	<p>CLO1 – Navigation Aids: Identify, understand, and effectively utilize various aids to navigation, including lighthouses, buoys, and radio aids.</p> <p>CLO2 – Depth Measurement: Measure water depths accurately using both manual and electronic sounding techniques.</p> <p>CLO3 – Dead Reckoning Navigation: Perform dead reckoning navigation, calculating positions while accounting for speed, course, and drift corrections.</p> <p>CLO4 – Tides and Currents: Apply tidal and current data to plan, adjust, and optimize voyages for safe and efficient navigation.</p> <p>CLO5 – Integrated Navigation Techniques: Integrate traditional and electronic navigation methods in practical exercises to enhance positional accuracy.</p> <p>CLO6 – Chart and Publication Interpretation: Interpret nautical charts, publications, and simulation outputs to support comprehensive voyage planning.</p> <p>CLO7 – Communication in Bridge Team: Communicate navigation plans, decisions, and situational awareness effectively within a bridge team.</p> <p>CLO8 – Problem Solving in Navigation: Analyze and solve navigation problems in complex coastal and open-sea environments using theoretical and practical methods.</p>

	<p>CLO9 – Professional and Ethical Responsibilities: Demonstrate awareness of professional, ethical, and safety responsibilities in maritime navigation.</p> <p>CLO10 – Applied Navigation Integration: Apply combined knowledge of navigation aids, instruments, charts, and environmental factors to real-world voyage planning and decision-making.</p>
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Content of the Course

Week	Subject
1	Introduction and Basic Concepts <ul style="list-style-type: none"> • Definition, history, and types of navigation • Elements of navigation and fundamental concepts • The Earth, coordinate system, latitude and longitude
2	Electronic Navigation Aids <ul style="list-style-type: none"> • Electronic Chart Display and Information System (ECDIS): functions and applications • Integration of electronic and paper-based navigation methods
3	Navigational Tools and Publications <ul style="list-style-type: none"> • Construction of the Mercator chart • Small area plotting sheets • Definition of meridian parts
4	Distance and Direction <ul style="list-style-type: none"> • Definition of distance and direction • Measuring and calculating distances on charts • Great circle arcs and rhumb lines
5	Course and Bearings <ul style="list-style-type: none"> • Types of courses (true, magnetic, compass) • Bearings: relative and true • Applying bearings to charts
6	Compasses I <ul style="list-style-type: none"> • Magnetic compass: reading, degree and point systems • Earth's magnetic field and ship-induced magnetism (P, Q, R forces) • Natural and artificial magnetic deviation
7	Compasses II <ul style="list-style-type: none"> • Structure, errors, and corrections of the magnetic compass • Gyrocompass: structure, operation, errors, and corrections • Determining compass error, application to course and bearings
8	Midterm Exam (Covers Weeks 1–7)
9	Coastal Navigation and Position Fixing I <ul style="list-style-type: none"> • Position lines and position circles (bearing and distance) • Transit lines and chart plotting • Basic methods of coastal navigation
10	Coastal Navigation and Position Fixing II <ul style="list-style-type: none"> • Fix, Running Fix, Estimated Position (EP), and Most Probable Position (MPP) • Double angle methods • Safe navigation without fix methods
11	Aids to Navigation I <ul style="list-style-type: none"> • Navigational aids at sea and on coasts • Identification and characteristics of lighthouses • Day and night visibility ranges of lights
12	Aids to Navigation II <ul style="list-style-type: none"> • Light and fog signal publications • Sector lights and their use • Buoyage systems: lateral, cardinal, and other buoys
13	Radio Navigational Aids <ul style="list-style-type: none"> • Radio navigation aids and their symbols • Use of radio aids in charts and publications • Introduction to modern electronic systems (e.g., ECDIS integration)
14	Mathematical Navigation <ul style="list-style-type: none"> • Plane sailing, traverse sailing

	<ul style="list-style-type: none">• Latitude sailing and longitude sailing• Middle latitude sailing and Mercator sailing
15	Mathematical Navigation <ul style="list-style-type: none">• Plane sailing, traverse sailing• Latitude sailing and longitude sailing• Middle latitude sailing and Mercator sailing

Methods and Techniques used in the Course

Lectures: Conceptual and theoretical explanations of navigation principles, tidal and current theory, and aids to navigation.

Interactive Discussions: Question-and-answer sessions, scenario-based discussions to reinforce understanding of navigation concepts.

Chart Work Exercises: Hands-on plotting, dead reckoning, tidal and current corrections, and voyage planning on nautical charts.

Simulation-Based Training: Use of radar, ECDIS, and bridge simulators to apply theoretical knowledge in realistic navigation scenarios.

Case Studies: Analysis of real-world navigation problems, including coastal, estuary, and open-sea passages.

Assignments and Homework: Practical problem-solving exercises, calculations for tides, currents, distances, and courses.

In-Class Demonstrations: Practical use of aids to navigation, sounding techniques, and speed measurement instruments.

Independent Study: Self-learning using nautical publications, tidal/current tables, and electronic navigation systems.

Sample Questions

- Explain the differences between lateral and cardinal buoys. Provide examples of situations where each would be used.
- Describe the characteristics of sector lights and explain how they assist in coastal navigation.
- Identify and interpret the symbols for radio navigation aids on a nautical chart.
- Describe the procedure for measuring water depth using a hand lead. How would you correct the sounding for a moving vessel?
- Explain the principles of electronic echo-sounders and discuss their advantages and limitations compared to manual soundings.
- A vessel records soundings along a route. Using these soundings, determine safe clearance over a submerged obstruction, applying necessary tidal corrections.
- A ship departs from a known position at 0900 with a course of 045° and a speed of 12 knots. After 3 hours, the ship experiences a current with a set of 030° and drift of 2 knots. Calculate the corrected position using DR.
- Explain the steps to determine speed using a log line and how environmental factors may affect measurements.
- Discuss common sources of error in DR navigation and how they can be minimized.
- Using a given tidal table, calculate the expected high and low water times and heights for a port. How would you plan a safe entry for a vessel considering tidal currents?
- Explain the differences between spring and neap tides and their impact on vessel navigation.
- Using a current triangle, determine the set and drift required to maintain a desired course over ground in the presence of tidal flow.
- Explain how to integrate ECDIS data with manual chart work to ensure safe navigation in a coastal area. Include how you would cross-check positions and correct for discrepancies.
- Describe the steps to use radar plotting to verify position during restricted visibility.
- Discuss how voyage planning incorporates environmental factors such as wind, waves, currents, and tides to ensure safety.
- A vessel must navigate through a narrow channel with strong tidal currents and multiple lateral buoys. Describe the planning process and precautions to safely transit the channel.
- Evaluate a scenario where the electronic navigation system fails. How would you continue safe navigation using traditional methods?
- Using tidal and current data, calculate the best departure time for a port to maximize under-keel clearance.

Materials Used in the Course

Textbooks and Reference Books:

- *Bowditch's American Practical Navigator*, 2023 Edition – National Geospatial-Intelligence Agency
- *Admiralty Sailing Directions (Pilot Books)* – UK Hydrographic Office
- *Tidal and Current Tables* – Relevant editions for the region of study
- *Bridge Team Navigation Manual* – IMO Publications
- *Electronic Navigation Systems: ECDIS and Radar Handbook* – Relevant authors and editions

Nautical Charts and Publications:

- Admiralty Charts – Coastal and oceanic charts for practical exercises
- Notices to Mariners – Updates for chart corrections
- Light Lists and List of Radio Signals – For identification of aids to navigation
- Tidal Atlases and Current Atlases – For current and tidal calculations

Equipment and Tools:

- Magnetic and Gyro Compasses
- Parallel Rulers, Dividers, and Protractors
- Echo-Sounders (Manual and Electronic)
- Speed Logs and Log Lines
- Hand Lead Lines and Sounding Equipment
- Navigational Calculators and Software (ECDIS Simulators, Voyage Planning Tools)

Digital Resources:

- Online nautical chart portals and navigation apps (e.g., Navionics, NOAA ENC Viewer)
- IMO e-learning modules and simulation tutorials
- Research papers and case studies on coastal and open-sea navigation

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	1	2	2	2	2	2	3	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	1	1
PO10	1	2	2	2	2	2	2	2	2	2
PO11	1	1	1	1	1	1	1	1	1	1
PO12	1	1	1	1	1	1	1	1	1	1

Course Learning Outcomes/ Evaluation Method		
CLO	Teaching Method	Assessment Method
CLO1 – Navigation Aids	Lecture, Demonstration, Multimedia Presentation	Quizzes, Assignments, Midterm Exam
CLO2 – Depth Measurement	Lecture, Hands-on Sounding Practice, Lab Exercises	Lab Reports, Quizzes, Practical Exams
CLO3 – Dead Reckoning Navigation	Lecture, Problem-Solving Sessions, Simulation Exercises	Assignments, Midterm Exam, Practical Exercises
CLO4 – Tides and Currents	Lecture, Case Studies, Simulation	Quizzes, Assignments, Midterm Exam
CLO5 – Integrated Navigation Techniques	Lecture, Practical Exercises, Bridge Simulations	Practical Exams, Lab Reports, Assignments
CLO6 – Chart and Publication Interpretation	Lecture, Tutorials, Simulation Exercises	Quizzes, Assignments, Practical Exams
CLO7 – Bridge Team Communication	Role-Playing, Group Exercises, Simulation	Observation, Assignments, Practical Exams
CLO8 – Navigation Problem Solving	Problem-Based Learning, Case Studies, Simulations	Assignments, Midterm Exam, Practical Exercises
CLO9 – Professional & Ethical Responsibilities	Lecture, Discussions, Case Studies	Quizzes, Assignments, Participation
CLO10 – Applied Navigation Integration	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	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	2	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus



Course name: Maritime Safety II							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
SAF102	I	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 Deliceirmak Faculty of Maritime Studies Wednesday / 08:00 – 12:20 +90 (392) 650 26 00 / 4060 cagri.deliceirmak@kyrenia.edu.tr www.kyrenia.edu.tr				

Course Description	<p>The course will be conducted in accordance with the IMO Model Courses 1.19, 1.20, and 1.23, as well as the national regulation "Egitim Sinav Yonergesi 2025" of the Turkish Republic. Successful students will be eligible to obtain mandatory STCW certificates of (1); Personal Survival Techniques, (2); Fire Prevention and Fire Fighting, (3); Proficiency in Survival Crafts and Rescue Boats (Other than Fast Rescue Boats). The course contents include Mustering in emergencies onboard. The operation, maintenance, launching, and recovery of Survival Crafts and Rescue Boats. Evacuation procedures and survival techniques at sea. Dangers, life, and best practices in survival crafts. Preventing and fighting fires onboard. Firefighting methods, operations, and maintenance of the firefighting equipment.</p>
Course Aims and Objectives	<p>This course aims to train students with the essential knowledge, skills, and competencies required for maritime safety, emergency response, and safe working practices on board and in emergencies. The course provides a foundation for understanding personal survival techniques at sea, fire prevention and firefighting on board, and the operation of survival craft.</p> <ul style="list-style-type: none"> • Demonstrate proficiency in the operation, maintenance, launching, and recovery of survival crafts and rescue boats aboard the vessel. • Identify potential hazards and implement preventive measures to ensure safety on board. • Demonstrate knowledge and proficiency in fire prevention and firefighting methods on ships. • Demonstrate knowledge and proficiency in muster and evacuation procedures during onboard emergencies. • Demonstrate knowledge and proficiency in personal survival techniques at sea.
Course Learning Outcomes	<p>LO1: Proper utilization of survival craft and rescue boats on vessels, encompassing launching, recovery, and operational procedures.</p> <p>LO2: Assess potential hazards and implement preventive measures to ensure a safe environment on board.</p> <p>LO3: Proficiency in fire prevention and firefighting onboard, including the use and maintenance of firefighting equipment, alarms, and detection systems.</p> <p>LO4: Proficiency in mustering, response, and evacuation procedures during emergencies aboard the vessel.</p> <p>LO5: Proficiency and requisite skills in personal survival techniques at sea.</p>

Content of the Course

Week	<i>Subject</i>
1	Fire Prevention and Firefighting Terminology and related maritime English terms. Description of fire. Ignition, spreading, and extinguishing of fire. Prevention and the most common reasons for fire onboard. Classification of fire and appropriate extinguishing agents.
2	Fire Prevention and Firefighting Terminology and related maritime English terms. Firefighting equipment and systems which used on board. Fixed and portable extinguishers. Fire main, hydrants, hoses, nozzles, and pumps.
3	Fire Prevention and Firefighting Terminology and related maritime English terms. Fireman outfit and Breathing Apparatus (SCBA). Detection systems Fire doors, escape routes, and procedures.
4	Fire Prevention and Firefighting (Practical) Practical Training Operation of Portable Fire Extinguishers Operation of Fire control systems, including fire pumps, hoses, and nozzles Operation of Fixed Fire Extinguishers (Detection and Sprinkler Systems)
5	Fire Detection and Alarm Systems (Practical) Operation of Fixed Fire Extinguishers (CO2 System) Donning and use of Fireman's Outfit and BA Set Fire in enclosed spaces Rescue from enclosed spaces
6	Survival Techniques at Sea Terminology and related maritime English terms. Emergencies on board and survival methods Life Saving Appliances onboard, including survival crafts and personal life saving appliances Musters, training, and drills Launching - Recovery Operations and maintenance of Lifeboats
7	Survival Techniques at Sea Terminology and related maritime English terms. Use of life jackets Use of immersion suits Use of Thermal Protective Equipment Use of lifebuoys
8	Survival Techniques at Sea Terminology and related maritime English terms. Mustering and Abandoning Ship Procedures Survival techniques and dangers in survival crafts Survival techniques, dangers, and correct actions in the sea
9	Survival Techniques at Sea (Practical)

	Use of Personal Life Saving Appliances. Correct use of life jackets, immersion suits, and TPA Mustering and Abandoning Ship practice Jumping and swimming methods in the sea
10	Survival Techniques at Sea (Practical) Use of Personal Life Saving Appliances. Correct use of life jackets, immersion suits, and TPA Mustering and Abandoning Ship practice Jumping and swimming methods in the sea
11	Proficiency in Survival Crafts and Rescue Boats Terminology and related maritime English terms. Lifeboats, the types, structure, and specifications Lifeboat Equipment and purposes Launching and Recovery Appliances of Lifeboats Launching - Recovery Operations and maintenance of Lifeboats
12	Proficiency in Survival Crafts and Rescue Boats Terminology and related maritime English terms. Liferafts, the types, structure, and specifications Liferaft Equipment and purposes Launching Appliances of Liferafts Launching Operations and maintenance of Liferafts
13	Proficiency in Survival Crafts and Rescue Boats Terminology and related maritime English terms. Survival techniques in Lifeboats and Liferafts Use of pyrotechnics, EPIRB, and SART in survival craft. Importance of food and water in survival crafts Dangers in Survival Crafts Rescue operations in Survival Crafts
14	Proficiency in Survival Crafts and Rescue Boats (Practical) Abandoning Ship with Lifeboats Preparing Lifeboat for Launching Launching and Recovering of Lifeboats Starting the engine and operating the release mechanism Use of lifeboat equipment, including painter line, sea-anchor, and pyrotechnics
15	Proficiency in Survival Crafts and Rescue Boats (Practical) Abandoning Ship with Liferafts Preparing Lifeboat for Launching Launching and inflating Liferafts Boarding Liferaft Use of liferaft equipment, including painter line, sea-anchor, and pyrotechnics

Methods and Techniques used in the Course

Lectures and Interactive Discussions:

- Presentation of theoretical concepts related to maritime safety, first aid, and emergency procedures.
- Encouraging active participation and Q&A sessions to deepen understanding.

Practical Demonstrations and Simulations:

- Hands-on training for first aid, firefighting, lifesaving, and emergency response.
- Use of simulated accident scenarios, emergency drills, and onboard equipment demonstrations.

Case Studies and Problem-Solving Exercises:

- Analysis of real maritime incidents to understand causes, preventive measures, and response strategies.
- Group exercises to develop decision-making and critical thinking skills during emergencies.

Use of Multimedia and E-Learning Tools:

- Instructional videos, interactive e-learning modules, and digital resources to illustrate safety procedures and equipment use.

Teamwork and Role-Playing Activities:

- Role assignment in emergency scenarios to practice coordination, communication, and leadership under pressure.

Assessments and Feedback:

- Regular evaluation of practical skills, knowledge tests, and drills.
- Immediate feedback and reflection sessions to improve performance and understanding.

Integration with International Standards:

- Training aligned with IMO, STCW, and ISPS Code requirements for maritime safety and security.

Sample Questions

Fire Prevention and Fire Fighting

- What type of portable fire extinguishers are used on ships?
- What are the extinguishing methods of a fire?

Survival Techniques at Sea

- Which personal LSA are used to protect body-core temperature in sea?
- What type of personal life saving appliances are used onboard?

Proficiency in Survival Crafts:

- What type of lifeboats are used on cargo ships?
- What is HRU?
- What are the launching methods of liferafts?

Materials Used in the Course

Textbooks & Reference Books:

- Lecturer Notes, Related IMO Model Courses and STCW (Standards of Training, Certification, and Watchkeeping) manuals.
- SOLAS Consolidated Edition, LSA Code, FSS Code, PST Workbook, The Fire Fighting System Guidance, Fire Prevention and Fire Fighting
 - SOLAS Consolidated Edition
 - LSA Code
 - FSS Code
 - PST Workbook
 - The Fire Fighting System Guidance
 - Fire Prevention and Fire Fighting

Supplementary Resources

- Instructional videos demonstrate emergency response techniques, personal safety, and the use of protective equipment.
- Interactive simulations of onboard emergency scenarios, including collision, flooding, fire, and piracy attacks.
- Online resources from the International Maritime Organization (IMO) and maritime safety training platforms.
- Survival Crafts (Lifeboat and Liferaft) and Rescue Boats.
- Personal life-saving appliances (PPE) such as life jackets, lifebuoys, immersion Suits, and TPA.
- Firefighting equipment: portable extinguishers, fire hoses, fire nozzles, Fireman's Outfit and BA Set, fire blankets, fire detection and alarm systems, fixed CO2 System, and Foam Applicators.

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	x	x	x	x	x
PO2	3	3	3	3	3	x	x	x	x	x
PO3	3	3	3	3	3	x	x	x	x	x
PO4	2	2	2	2	2	x	x	x	x	x
PO5	3	3	3	3	3	x	x	x	x	x
PO6	3	3	3	3	3	x	x	x	x	x
PO7	3	3	3	3	3	x	x	x	x	x
PO8	2	2	2	2	2	x	x	x	x	x
PO9	1	2	1	1	1	x	x	x	x	x
PO10	3	3	3	3	3	x	x	x	x	x
PO11	3	3	3	3	3	x	x	x	x	x
PO12	3	3	3	3	3	x	x	x	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

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	3	5	15
In-class Discussion(s)	15	1	15
Quiz(es)	-	-	-
Preparation for Quiz(es)	-	-	-
Laboratory	-	-	-
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			102
ECTS Credit			3

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	1	5
Laboratory	-	-
Application	3	45
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Assignment(s)/Homework/Class Works	-	-
Providing reliability and motivation for the individual's homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	20
Final/Oral Exams	1	30
Total	6	100

Grading Policy	Percentage	Course Grade	Coefficient
	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	<ul style="list-style-type: none"> 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
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus



Course name: Seamanship II							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
SEA102	I	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 Deliceirmak 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	<p>This course provides students with a comprehensive understanding of the fundamental principles, practices, and terminology of maritime operations. It covers marine ropes and ropework, anchoring and mooring operations, cargo handling operations, and ship steering. The course also emphasizes the maintenance and repair of ship structures, machinery, and safety equipment, as well as the correct application of maritime English terminology. Through a combination of theoretical instruction and practical examples, students will develop the knowledge and skills necessary to safely and effectively operate and manage vessels in a professional maritime environment.</p>
Course Aims and Objectives	<p>This course aims to equip students with a thorough understanding of seamanship principles, ship structure and equipment, and safe shipboard operations. The course combines theoretical knowledge with practical skills, preparing students to effectively manage routine operations, maintenance, and safety procedures on board various types of vessels.</p> <ul style="list-style-type: none"> • Comprehend the classification, varieties, and specifications of marine ropes. • Understand and practice rope work, including knots, bends, and hitches. • Acquire practical knowledge in mooring, anchoring, steering, and ship handling operations. • Identify and elucidate the functions of shipboard equipment, including ropes, anchoring, mooring, cargo handling, steering, and engine operation systems. • Understand the instructions and commands related to mooring, anchoring, steering, cargo handling, and ship handling operations. • Acquire knowledge regarding maintenance and repair practices concerning ship structures, machinery, and safety equipment. • Acquire knowledge of standard maritime terminology employed in shipboard operations to facilitate effective communication onboard vessels. • Acquire a comprehensive understanding of safe working practices in maritime operations, including cargo handling, maneuvering, and maintenance procedures.
	<p>LO1: Classify ropes according to type, function, and construction.</p> <p>LO2: Demonstrate proficiency in ropework, mooring, and anchoring operations, including the use of different types of ropes, knots, and mooring equipment.</p>

Course Learning Outcomes	<p>LO3: Demonstrate proficiency in using shipboard equipment and systems, including ropes, anchoring, mooring, cargo handling, steering, and engine systems.</p> <p>LO4: Demonstrate expertise in commands and procedures related to mooring, anchoring, steering, cargo handling, and ship handling operations.</p> <p>LO5: Prepare and execute shipboard maintenance plans, including decks, machinery, safety equipment, painting, and corrosion prevention works.</p> <p>LO6: Use and apply proper maritime terminology in shipboard operations.</p> <p>LO7: Demonstrate expertise and adhere to safe operational practices onboard, ensuring the well-being of the crew and the preservation of the vessel's integrity.</p> <p>LO8: Integrate theoretical knowledge and practical skills for problem-solving in ship operations and maintenance scenarios.</p>
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Content of the Course

Week	<i>Subject</i>
1	Marine Ropes and Types Terminology and related maritime English terms Definition, type, material, and purpose of ropes Construction of ropes Dimensions, safe working loads, and breaking strength of ropes
2	Marine Ropes and Types Terminology and related maritime English terms Natural Ropes: characteristics, specifications, and purposes Synthetic Ropes: characteristics, specifications, and purposes Steel Wire Ropes: characteristics, specifications, and purposes Dimensions, safe working loads, breaking strength, and safety factor of ropes
3	Rope Work: Knots, Bends, and Hitches Terminology and related maritime English terms The most common knots and bends used on shipping Hitches, synthetic and steel ropes Splicing and eye-making techniques
4	Rope Work: Knots, Bends, and Hitches (Practical) Terminology and related maritime English terms The most common knots and bends used on shipping Hitches, synthetic and steel ropes Splicing and eye-making techniques
5	Mooring Ropes Terminology and related maritime English terms Mooring ropes and names Mooring operations Mooring commands Safety factors and precautions in mooring operations
6	Mooring Ropes (Practical) Terminology and related maritime English terms Mooring ropes and names Mooring operations Mooring commands Safety factors and precautions in mooring operations
7	Anchors and Chains Terminology and related maritime English terms Types of anchors and their uses Anchor chain construction, strength, and handling Windlasses and anchoring equipment Commands and communication in anchoring operations
8	Cargo Handling Equipment Terminology and related maritime English terms Winches and derricks, parts and riggings Cranes (ship and shore-based) Slings, pallets, nets, and containers Pulleys, sheaves, blocks, tackles, and their rigging and lifting calculations Commands and communication in cargo operations
9	Steering and Engine (Maneuvering) Commands

	Terminology and related maritime English terms Steering commands Engine Commands Preparation for manoeuvring
10	Maintenance and Repair (I) Principles of planned maintenance Deck maintenance: daily, voyage, and annual tasks Corrosion causes and anti-corrosion methods
11	Maintenance and Repair (II) Surface preparation: chipping, scraping, sandblasting Painting materials and application techniques Storage and management of paint supplies
12	Maintenance and Repair (III) Maintenance of wood, aluminum, and rope materials Maintenance of mooring equipment, chains, and anchors Lubrication and care of moving equipment
13	Maintenance and Repair (IV) Tank maintenance: ballast, fresh water, cargo tanks Hatch covers, ladders, and gangways Welding, cutting, and hot work planning
14	Maintenance of Deck Machinery and Safety Equipment Maintenance of winches, windlasses, and cranes Lifesaving and firefighting equipment maintenance Cooperation between the deck and engine departments
15	Review and Maritime English Terminology English terminology for ship types, structures, and equipment Seamanship vocabulary and practical usage Course review and preparation for final assessment

Methods and Techniques used in the Course

Lectures & Theoretical Explanations – Instructor-led presentations supported by visual materials to explain ship structures, classifications, and maritime terminology.

Classroom Discussions & Question–Answer Sessions – Interactive sessions to encourage critical thinking and clarification of concepts.

Case Studies & Problem-Solving Activities – Analysis of real-life seamanship scenarios and shipboard operations to enhance decision-making skills.

Practical Demonstrations – Use of ship models, diagrams, and multimedia tools to demonstrate structural elements, equipment, and seamanship practices.

Collaborative Learning – Group assignments and peer discussions to promote teamwork and communication using maritime terminology.

Simulation-Based Learning (where applicable) – Application of ship handling and navigation software, or bridge simulators, to reinforce theoretical knowledge.

Terminology Drills & Exercises – Practice of English maritime terms to improve professional language competence.

Assignments & Projects – Independent research tasks and written reports to develop analytical and academic writing skills.

Examinations & Quizzes – Assessment methods to measure theoretical understanding and practical application.

Sample Questions

- What are the three primary construction materials of ropes used on ships?
- What is the purpose of the spring line?
- Which of the following mooring lines are not floating?
- Describe the purpose and maintenance procedure for the ship's windlass and anchor system.
- What is the importance of surface preparation in painting?
- Explain the meaning of the following terms. Ease to port, Hard to Starboard, Heave up, anchor aweigh, cast off.

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, Introduction to Naval Architecture, Ship Construction, Seamanship Techniques: Shipboard and Marine Operations, The Annapolis Book of Seamanship.

Supplementary Resources

- Instructional videos demonstrate seamanship techniques and ship construction.
- Online resources from the International Maritime Organization (IMO) and maritime safety training platforms.
- Training ship

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	2	3	3	3	x	x
PO3	3	3	3	3	3	3	3	3	x	x
PO4	3	3	3	3	2	3	3	3	x	x
PO5	2	2	3	2	3	2	2	2	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	3	2	2	2	x	x
PO9	1	2	2	2	2	2	1	1	x	x
PO10	3	3	3	3	3	3	3	3	x	x
PO11	2	2	2	2	3	2	2	2	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	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	2	5	10
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			97
ECTS Credit			3

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	1	10
Laboratory	-	-
Application	2	30
Field 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	30
Total	6	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-



University of Kyrenia
Faculty of Maritime Studies
Maritime Transportation Management Engineering
Syllabus

Course name: Standards of Watchkeeping I							
Code	Year	Semester	Credit	ECTS	Course application, Hour/Week		
					Theoretical	Application	Laboratory
WAT102	II	Spring	4	3	4	0	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			Wednesday 09.30-11.20				
Instructor information			<p style="text-align: center;">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</p>				

Course Description	<p>This course provides students with a comprehensive understanding of the principles and practices of safe watchkeeping in accordance with international maritime conventions and standards, particularly the STCW Convention. The course covers bridge organization, the duties and responsibilities of the Officer of the Watch (OOW), fitness for duty, and various types of watchkeeping including sea, port, anchor, and cargo operations. Students will also learn about voyage planning, watch handover procedures, system checks during navigation, and safe navigation in restricted waters. Emphasis is placed on the use of navigational equipment, compliance with COLREGs, and effective communication with Vessel Traffic Services (VTS) and Ship Reporting Systems.</p>
Course Aims and Objectives	<ul style="list-style-type: none"> • To provide students with the fundamental knowledge and skills necessary for safe and effective watchkeeping at sea and in port. • To develop awareness of the responsibilities and duties of the Officer of the Watch (OOW) in compliance with international maritime regulations and standards. • To enhance students' ability to plan, organize, and execute different types of watches including sea, port, anchor, and cargo operations. • To familiarize students with bridge organization, navigational equipment, and voyage planning procedures for ensuring safe navigation. • To promote safe navigation practices in restricted waters, during pilotage, and under challenging conditions. • To improve communication skills and knowledge of reporting systems such as VTS and ship reporting procedures for operational safety.
Course Learning Outcomes	<p>CLO1 – Safe Watchkeeping Principles: Explain the principles of safe watchkeeping in compliance with STCW and COLREG conventions.</p> <p>CLO2 – Bridge Organization & Responsibilities: Describe the organization of the bridge and the duties and responsibilities of officers during various types of watches.</p> <p>CLO3 – Voyage Planning: Demonstrate knowledge of voyage planning, required preparation documents, and procedures necessary for safe navigation.</p> <p>CLO4 – Types of Watches: Identify requirements and best practices for sea, port, anchor, and cargo watches.</p> <p>CLO5 – Navigation in Restricted Waters: Apply safe navigation techniques in restricted waters, coastal areas, and during pilotage operations.</p> <p>CLO6 – Use of Navigational Aids: Utilize navigational instruments, equipment, and electronic aids effectively to maintain a safe watch.</p> <p>CLO7 – Reporting Practices: Recognize the importance of vessel reporting systems (VTS, ship reporting schemes) and apply correct reporting practices.</p> <p>CLO8 – Risk Analysis & Decision-Making: Analyze and evaluate potential risks during watchkeeping to ensure maritime safety, environmental protection, and operational efficiency.</p> <p>CLO9 – Professional Responsibility: Demonstrate understanding of professional responsibility, duty fitness, and situational awareness during watch.</p>

	<p>CLO10 – Integrated Watchkeeping Competence: Combine theoretical knowledge, practical skills, and situational awareness to maintain an effective and safe watch in real operational scenarios.</p>
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Content of the Course

Week	Subject
1	Introduction to Safe Watchkeeping Principles, importance, and international framework (STCW Code)
2	Introduction to Safe Watchkeeping Principles, importance, and international framework (STCW Code)
3	Fitness for Duty Human factors, fatigue management, and maintaining operational readiness
4	Types of Deck Watches Sea watch, port watch, anchor watch, and gangway watch
5	Voyage Planning Passage planning, preparation of documents, and pre-departure requirements
6	Watch Handover Procedures Essential checks and communications during watch change
7	Monitoring During Watch System checks, operational controls, and navigation equipment
8	Navigation in Restricted Conditions Coastal and confined waters, pilotage techniques, and blind pilotage
9	Port Arrival and Departure Preparations, reporting requirements, and coordination
10	Ship Reporting Systems Principles of ship reporting, mandatory reporting schemes, and international regulations
11	Vessel Traffic Services (VTS) Procedures, communication protocols, and reporting requirements
12	Bridge Resource Management (BRM) I Principles, resource allocation, task prioritization
13	Bridge Resource Management (BRM) II Communication, assertiveness, leadership, situational awareness, teamwork
14	Collision Regulations (COLREGs) Rules for preventing collisions at sea, responsibilities between vessels
15	Marine Environmental Protection Watchkeeping responsibilities for pollution prevention, MARPOL compliance

Methods and Techniques used in the Course

Lectures and Presentations: Theoretical knowledge is delivered through interactive lectures supported by multimedia presentations.

Case Studies: Real-life maritime scenarios are analyzed to improve students' decision-making and problem-solving skills.

Classroom Discussions: Students are encouraged to share opinions and engage in discussions to deepen understanding of responsibilities during watch.

Practical Examples: Illustrations from bridge operations, voyage planning, and reporting systems are demonstrated.

Role-Playing & Simulation Practices: Watchkeeping duties are practiced through role-playing and simulator-based exercises (where available).

Question–Answer Sessions: Active engagement with students to ensure comprehension of STCW and COLREG requirements.

Self-Study and Assignments: Students are given assignments and encouraged to review watchkeeping cases individually.

Sample Questions

- Which of the following is NOT a responsibility of an officer of the watch (OOW) during bridge watchkeeping?
 - a) Keeping a proper lookout
 - b) Monitoring the vessel's position and course
 - c) Performing cargo operations
 - d) Complying with COLREGs
- According to STCW regulations, what is the minimum rest period for seafarers in any 24-hour period?
 - a) 8 hours
 - b) 10 hours
 - c) 12 hours
 - d) 14 hours
- Explain the importance of handing over procedures during watchkeeping.
- What are the key elements to be checked before taking over a navigational watch?
- Describe the responsibilities of the OOW while navigating in restricted waters.
- You are the OOW during a night passage in coastal waters. The radar shows a vessel crossing from starboard to port, and the lookout reports a light on the horizon. Describe the actions you would take in compliance with COLREGs.
- During anchor watch, you notice that the vessel is dragging anchor. Explain the steps you should follow immediately.

Materials Used in the Course

Textbooks & References

- International Maritime Organization (IMO), *STCW Convention and Code* (latest edition).
- International Maritime Organization (IMO), *COLREGs – International Regulations for Preventing Collisions at Sea*.
- Cockcroft, A.N. & Lameijer, J.N.F., *A Guide to the Collision Avoidance Rules*.
- Turpin, E., & McEwen, W.E., *Marine Engineering and Watchkeeping Handbook*.
- Appropriate publications from national and international maritime authorities.

Course Notes & Handouts

- Instructor-prepared lecture notes, slides, and summaries.
- Case studies and examples of watchkeeping incidents.
- Checklists for bridge, anchor, and port watchkeeping.

Digital & Simulation Resources

- Bridge simulator sessions for practicing safe watchkeeping.
- Radar and ARPA simulation exercises.
- ECDIS training modules (where available).

Supporting Materials

- Shipboard manuals and logbook samples.
- Watchkeeping schedules and duty rosters.
- Videos and interactive multimedia on safe navigation and watchkeeping practices.

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
<p>*0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution</p>						

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	3	3
PO2	2	2	3	2	3	3	2	3	3	3
PO3	3	3	3	3	3	3	3	3	3	3
PO4	2	2	3	2	3	3	2	3	3	3
PO5	3	3	3	3	3	3	3	3	3	3
PO6	2	2	2	2	3	3	2	3	3	3
PO7	1	1	1	1	1	1	1	2	2	2
PO8	1	1	2	1	2	2	1	2	2	2
PO9	1	1	2	1	2	2	1	2	2	2
PO10	2	2	3	2	3	3	2	3	3	3
PO11	1	1	2	1	2	2	1	2	2	2
PO12	1	1	2	1	2	2	1	2	2	2

Course Learning Outcomes/ Evaluation Method		
CLO	Teaching Method	Assessment Method
CLO1 – Safe Watchkeeping Principles	Lecture, Case Studies, Discussion	Quizzes, Assignments, Exams
CLO2 – Bridge Organization & Responsibilities	Lecture, Guided Practice, Simulation	Observation, Practical Exams, Assignments
CLO3 – Voyage Planning	Lecture, Hands-on Exercises, Simulation	Assignments, Practical Exams, Project Reports
CLO4 – Types of Watches	Lecture, Role-Playing, Practical Exercises	Observation, Quizzes, Practical Exams
CLO5 – Navigation in Restricted Waters	Simulator Training, Practical Exercises	Simulation Assessment, Practical Exams, Observation
CLO6 – Use of Navigational Aids	Demonstration, Hands-on Practice, Simulator	Observation, Practical Exams, Assignments
CLO7 – Reporting Practices	Lecture, Case Studies, Role-Playing	Quizzes, Assignments, Observation
CLO8 – Risk Analysis & Decision-Making	Scenario-Based Exercises, Simulation, Group Work	Practical Exams, Projects, Observation
CLO9 – Professional Responsibility	Lecture, Discussion, Reflection Exercises	Assignments, Oral Presentations, Observation
CLO10 – Integrated Watchkeeping Competence	Simulation, Hands-on Practice, Group Projects	Practical Exams, Project Reports, 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	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	5	1	5
Micro-Teaching Sessions	-	-	-
Lesson Planning	-	-	-
Materials Adaptation	-	-	-
Material Development	-	-	-
Draft Preparation	-	-	-
Drawing	-	-	-
Essay Writing	-	-	-
Tutorial(s)	-	-	-
Portfolio Preparation	-	-	-
Portfolio Presentation	-	-	-
Total Workload			119
ECTS Credit			3

Evaluation System		
Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Homework/Assignments	-	-
Providing reliability and motivation of the individual homework completion and Submission	-	-
Presentation/Jury	-	-
Project	-	-
Quiz	-	-
Midterms/Oral Exams	1	40
Final/Oral Exams	1	60
Total	2	100

Grading Policy	Percentage	Course Grade	Coefficient
	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
Course Requirements and Policies	Less than 70% attendance	NA	-