The syllabuses of the courses given in the undergraduate program at Eskisehir Osmangazi University Software Engineering Department are listed below.

1	15XXXXXXX	TURKISH I	2+0	2 ECTS	Compulsory
1	15XXXXXXX	CALCULUS I	4+0	5 ECTS	Compulsory
1	15XXXXXXX	PHYSICS I	3+0	3 ECTS	Compulsory
1	15XXXXXXX	PHYSICS I LAB	0+2	2 ECTS	Compulsory
1	15XXXXXXX	INTRODUCTION TO SOFTWARE ENGINEERING	2+0	3 ECTS	Compulsory
1	15XXXXXXX	INTRODUCTION TO PROGRAMMING	3+0	4 ECTS	Compulsory
1	15XXXXXXX	INTRODUCTION TO PROGRAMMING LAB	0+2	2 ECTS	Compulsory
1	15XXXXXXX	ADVANCED READING AND WRITING I	3+0	2 ECTS	Compulsory
1	15XXXXXXX	SOFTWARE PROJECT MANAGEMENT	3+0	4 ECTS	Compulsory
2	15XXXXXXX	TURKISH II	2+0	2 ECTS	Compulsory
2	15XXXXXXX	CALCULUS II	4+0	5 ECTS	Compulsory
2	15XXXXXXX	PHYSICS II	3+0	3 ECTS	Compulsory
2	15XXXXXXX	PHYSICS II LAB	0+2	2 ECTS	Compulsory
2	15XXXXXXX	LINEAR ALGEBRA	3+0	3 ECTS	Compulsory
2	15XXXXXXX	COMPUTER PROGRAMMING	3+0	4 ECTS	Compulsory
2	15XXXXXXX	COMPUTER PROGRAMMING LAB	0+2	2 ECTS	Compulsory
2	15XXXXXXX	ADVANCED READING AND WRITING II	3+0	2 ECTS	Compulsory
2	15XXXXXXX	DISCRETE COMPUTATIONAL STRUCTURES	3+0	4 ECTS	Compulsory

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
TURKISH I	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	2	0	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
			2	

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Providing information about the development and status of Turkish and proper use of the language in speech and in writing Instilling the importance of a national language
Short Course Content	Description and features of a language, languages of the world, position of Turkish among other languages, historical development of Turkish, development of western Turkish, language policies, pronunciation and punctuation.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Knowledge on history and development of Turkish language	8	1	A
2 Knowledge on basic grammar of Turkish	7	1	A
3 Ability to write essays in Turkish	7	1	A
4			
5			
6			
7			
8			
9			
10			

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Ergin, M. (1997). Üniversiteler İçin Türk Dili. İstanbul: Bayrak Yayınları
Supporting References	Kaplan, M. (1993). Kültür ve Dil. İstanbul: Dergâh Yayınları (8. baskı)
Necessary Course Material	-

Course Schedule	
1	Description and features of language
2	Languages of the world and Position of Turkish
3	Language policies
4	Spoken language
5	Written language
6	Classification of sounds
7	Vocalization
8	Mid-Term Exam
9	Pronunciation
10	Grammar and punctuation
11	Punctuation
12	Punctuation
13	Basic essay writing
14	Practices
15	Course Review
16,17	Final Exam

Calculation of Course Workload

Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	5	5
Final Exam	1	1	1
Studying for Final Exam	1	5	5
		Total workload	**54**
		Total workload / 30	**1.8**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Mid-term	50
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	5
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	3
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Lecturer Dr. İsmail Alperen BİÇER			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
CALCULUS I	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	4	0	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
5				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Teaching students the basic concepts, theorems of calculus and provide them the ability to solve mathematical problems.
Short Course Content	Functions. Limits and continuity. Differentiation. Applications of derivatives. Integration. Techniques of integration. Application of integration.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Solving limit problems.	1	1, 10	A, B
2 Defining differentiation.	1	1, 10	A, B
3 Applying derivatives to certain problems.	1	1, 10	A, B
4 Defining integration.	1	1, 10	A, B
5 Solving definite integrals.	1	1, 10	A, B
6 Applying integration to certain problems.	1	1, 10	A, B
7			
8			
9			
10			

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	J. R. Hass, C. E. Heil, M. D. Weir, P. Bogacki, Thomas' Calculus, Pearson, 15th ed., 2023.
Supporting References	J. Stewart, D. K. Clegg, S. Watson, Calculus, Cengage Learning; 9th ed, 2020.
Necessary Course Material	-

Course Schedule	
1	Functions and their graphs. Shifting and scaling.
2	Trigonometric functions. Exponential functions. Inverse functions. Natural logarithm.
3	Limits. Types of limits.
4	Types of limits. Continuity of a function.
5	Differentiation. Tangents and derivative at a point. Differentiation rules.
6	Derivatives of certain functions. Chain rule. Implicit differentiation.
7	Extreme values of a function. Mean value theorem.
8	Mid-Term Exam
9	Antiderivatives. Integration. Definite integrals and their properties.
10	Areas under the graphs. Average value of a continuous function.
11	Indefinite integrals and substitution method. Areas between curves.
12	Volumes using cross-sections. Volumes by disks for rotation. Solids of revolution.
13	Volumes using cylindrical shells. Arc length. Areas of surfaces of revolution.
14	Techniques of integration. Integration by parts. Trigonometric integrals.
15	Integration of rational functions by partial fractions. Heaviside method.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	4	56
Homework			
Quiz Exam	2	1	2
Studying for Quiz Exam	2	5	10
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	16	16
Final Exam	1	2	2
Studying for Final Exam	1	16	16
		Total workload	**160**
		Total workload / 30	**5.33**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	35
Quiz	20
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Emrah ATILGAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PHYSICS I	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	3	0	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
3				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Teaching Newtonian mechanics as one of the fundamental fields in physics; hence to provide students the proper problem solving strategies in related topics and helping to establish a foundation for their succeeding coursework.
Short Course Content	Units, vectors, motion along a straight line, motion in two-three dimensions, applications of Newton's laws, work, kinetic energy, potential energy, conservation of energy and momentum, rotational motion of rigid bodies, gravitation, and simple harmonic motion.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Proper use and conversion of units.	1	1	A
2	To be able to perform mathematical operations on vectors.	1	1, 10	A
3	Investigating the translational motion.	1	1	A
4	Applying Newton's law of dynamics problems.	1	1, 2, 5	A
5	Learning and exercising the concepts of work, kinetic & potential energy, and conservation of energy on related problem solving.	1	1, 2, 5, 7	A
6	To be able to solve problems on impulse, linear momentum, collisions, conservation of momentum.	1	1, 2, 5, 8	A
7	To be able to solve problems on rotation and rolling without slipping problems.	1	1, 2	A
8	To be able to solve problems on gravitation.	1	1, 2	A
9	To build quantitative skills and critical thinking by evaluating the physical interpretation of mathematical results; hence, obtaining knowledge on physical approach and physical modeling.	1	1, 2, 5, 6, 7, 8, 10	A, K
10				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Young H.D., Freedman R.A. University Physics with Modern Physics, 14th Edition (2015), Pearson.
Supporting References	Halliday, D., Resnick, R., and Walker, J. (2008). Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. Serway, R.A., Beichner, R.J., Physics For Scientists and Engineers with Modern Physics (2007), Harcourt College Publishers.
Necessary Course Material	-

Course Schedule	
1	Units, unit conversions, and physical quantities.
2	Vectors.
3	Motion along a straight line.
4	Motion in two and three dimensions.
5	Newton's laws.
6	Application of Newton's laws.
7	Work and kinetic energy.
8	Mid-Term Exam
9	Potential energy and conservation of energy.
10	Rotational motion of rigid bodies.
11	Rotational dynamics.
12	Rotational dynamics.
13	Equilibrium and elasticity.
14	Gravitation.
15	Simple harmonic motion
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	15	15
Final Exam	1	2	2
Studying for Final Exam	1	15	15
		Total workload	**90**
		Total workload / 30	**3**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Selçuk TEMİZ			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PHYSICS I LAB	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	0	2	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
2				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Teaching through conducting experiments on the topics related to the content of Physics I; hence, enhancing the students' perception and understanding on the important concepts and fundamental laws of the Newtonian Mechanics.
Short Course Content	Numerical analysis and error calculation, measurement, specification of the components of forces, Newton's laws of motion, projectile motion, conservation of energy, conservation of momentum, moment of inertia, springs, and viscosity experiments.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To enhance observational and analytical skills.	1, 11	13	C
2	Make measurements with common instruments.	4, 5	3	I
3	To be able to analyze quantitative information and errors.	5	15	E
4	To be able to represent experimental data by using graphics.	2, 5	15	E
5	To be able to compare experimental results with mathematical and physical models, hence make an interpretation.	5	8	E
6	Prepare a lab report.	1, 2, 4, 5, 6	15	E
7	Develop teamwork skills.	6	12	C, E, I, K
8	To get hands on experience about the topics of basic measurements, statics, kinematics, Newton's Laws, spring constants, viscosity.	1	3	A, I
9	Encourage the curiosity for physics and improve the ability to apprehend the solid correlations between physics and engineering applications.	1	11	I
10	To obtain knowledge and experience on building basic experimental set ups upon need.	3, 4	3, 6, 10	I

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Physics I Experiments. Eskişehir: Eskişehir Osmangazi Üniversitesi Yayınları, Sertaç Eroğlu, Murat Kellegöz, Gökhan Kılıç, Halil Yasin Adıyaman.
Supporting References	Fundamentals of Physics, Halliday Resnick, John Wiley and Sons Inc. 1988. Giancoli, D.C. (2004). Physics: Principles with Applications (6th Edition). Pearson Education Inc.
Necessary Course Material	-

Course Schedule	
1	Introduction to laboratory, and formation of lab groups.
2	Numerical analysis and error calculation.
3	Measurement experiment.
4	Motion with constant acceleration experiment.
5	Conservation of linear momentum experiment.
6	Projectile motion experiment.
7	Projectile motion experiment.
8	Mid-Term Exam
9	Free fall experiment.
10	Simple pendulum and conservation of energy experiment.
11	Motion on a frictional inclined plane experiment.
12	Springs experiment.
13	Moment of inertia experiment.
14	Viscosity experiment.
15	Make up experiment, general review and preparation for final exam.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)			
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	10	2	20
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam	1	2	2
Studying for Final Exam	1	10	10
		Total workload	**60**
		Total workload / 30	**2**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Report	50
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	2
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	2
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	2
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	2
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	3
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	2

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Selçuk TEMİZ			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO SOFTWARE ENGINEERING	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	2	0	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	3			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The main objective of this course is to provide fundamental knowledge about software engineering principles, software development life cycle, software processes, requirements engineering, and software design. It also introduces ethical considerations and professional responsibilities in software engineering.
Short Course Content	Introduction to software engineering, software development processes, software design principles, requirements engineering, testing methodologies, project management, software maintenance, and professional ethics.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Students will understand the basic principles of software engineering and the software development life cycle.	2	1, 5, 10, 11	A
2	Students will learn different software development methodologies.	2	1, 5, 10, 11	A
3	Students will gain an understanding of software design principles and software modeling techniques.	2, 3	1, 5, 10, 11	A
4	Students will comprehend the importance of requirements engineering and software documentation.	2, 4	1, 5, 10, 11	A
5	Students will be introduced to software testing methods and quality assurance.	2, 4, 5	1, 5, 10, 11	A
6	Students will recognize the importance of teamwork and communication in software development projects.	2, 6, 7	1, 5, 10, 11	A
7	Students will develop an awareness of ethical and professional responsibilities in software engineering.	9, 10, 11	1, 5, 10, 11	A
8				
9				
10				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Ian Sommerville, "Software Engineering," 10th Edition, Pearson, 2015, ISBN: 978-0133943030.
Supporting References	Roger S. Pressman, "Software Engineering: A Practitioner's Approach," 8th Edition, McGraw-Hill, 2014.
Necessary Course Material	Computer, projector.

Course Schedule	
1	Introduction to software engineering and its importance.
2	Software development life cycle (SDLC) and models.
3	Requirements engineering and software documentation.
4	Software design principles and software architecture.
5	Software testing techniques and quality assurance.
6	Software maintenance and evolution.
7	Agile methodologies and software project management.
8	Mid-Term Exam
9	Object-oriented analysis and design.
10	Software development tools and version control.
11	Human-computer interaction and usability engineering.
12	Risk management in software projects.
13	Professional ethics and responsibilities in software engineering.
14	Future trends in software engineering.
15	General review and preparation for final exam.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	30	30
		Total workload	**94**
		Total workload / 30	**3.13**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	5
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	4
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	3
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	3
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	3
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	2
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	4
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	3
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	3

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Uğur YAYAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO PROGRAMMING	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	3	0	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	4			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	This course aims to provide students with competencies regarding program development and algorithm design.
Short Course Content	Fundamentals of algorithms and programming, creating flow diagrams, loops, conditions, functions and variable types.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To be able to use programming tools effectively.	3,4	1,5,10,11	A
2	Creating a flow diagram of a problem.	2,3	1,5,10,11	A
3	Knowing and using the syntax rules of the C programming language.	2,3	1,5,10,11	A
4	To be able to convert the algorithm or flow diagram of a problem into C code.	2,3	1,5,10,11	A
5	Creating simple projects and writing programs in C-programming language.	2,3,4	1,5,10,11	A
6	Using decision structures.	2	1,5,10,11	A
7	Using loops.	2	1,5,10,11	A
8	Working with functions (subroutines).	2	1,5,10,11	A
9	Performing array operations.	2	1,5,10,11	A
10	Multidimensional Arrays	2	1,5,10,11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	H.M. Deitel, P.J. Deitel, I. Pohl, C: How To Program, 2013.
Supporting References	Lecture notes, slides and resources on the internet.
Necessary Course Material	Accessible computers for each student, Visual Studio 2013 or later, projection

Course Schedule	
1	Introduction.
2	C Programming and the basics of the C environment.
3	Structural programming and creating algorithm.
4	Control structures (If, If-Else, Switch-Case).
5	Control structures (Break-continue, assignment operators, increment and decrement operators.)
6	Program control and loops (For, While, Do-While) and logical operators.
7	Program control and loops (For, While, Do-While) and logical operators.
8	Mid-Term Exam
9	Functions.
10	Recursive functions.
11	Arrays
12	Arrays.
13	Usage of arrays and functions.
14	Multi dimensional arrays.
15	Multi dimensional arrays.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
		Total workload	**124**
		Total workload / 30	**4.13**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	2
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	5
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	3
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	3
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. İbrahim SAVRAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO PROGRAMMING LAB	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	0	2	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	2			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To teach high-level programming environments, Introduction to C language, structure programming, variables, expressions and initializations, functions and calling of functions, prototypes and header files, arrays and pointers.
Short Course Content	This course is practice of writing programs with using C programming language. Students learn how to design a program structure and simple applications which contain loops, decisions and functions.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To gain software development skills.	2,4	1,5,6,11,14,15	D,J
2	Familiarize yourself with concepts and terminology to facilitate communication with software developers.	2,4	1,5,6,11,14,15	D,J
3	Developing the ability to read, follow and understand simple codes.	2,4	1,5,6,11,14,15	D,J
4	Understanding how to write, test and debug programming code for simple problems.	2,4,5	1,5,6,11,14,15	D,J
5	To be able to define software development processes, critical steps and where programming is included in this.	2,4	1,5,6,11,14,15	D,J
6	To be able to define the common features and differences of modern programming languages.	2,4	1,5,6,11,14,15	D,J
7	Determining the contribution of programming to solving a problem.	2,4	1,5,6,11,14,15	D,J
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	H.M. Deitel, P.J. Deitel, I. Pohl, C: How To Program, 2013.
Supporting References	Lecture notes, slides and resources on the internet.
Necessary Course Material	Accessible computers for each student, Visual Studio 2013 or later, projection

Course Schedule	
1	Introduction of the laboratory.
2	Definition and application of C programming and the basics of the C environment.
3	Application of structural programming and creating algorithm.
4	Application of control structures (If, If-Else, Switch-Case).
5	Application of control structures (Break - continue, assignment operators etc.).
6	Application of program control and loops.
7	Application of program control and loops.
8	Mid-Term Exam
9	Application of functions.
10	Application of recursive functions.
11	Application of arrays.
12	Application of arrays.
13	Application of using arrays and functions.
14	Application of multi dimensional arrays.
15	Application of multi dimensional arrays.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	1	5	5
Project (Preparation and presentation time included)	1	15	15
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam			
Studying for Final Exam			
		Total workload	**62**
		Total workload / 30	**2.07**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Quiz	70
Project Observation	30
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	5
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	5
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	2
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. İbrahim SAVRAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ADVANCED READING AND WRITING I	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	3	0	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
			2	

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Introduction to the writing process Teaching paragraph and essay writing Practicing 5-paragraph essay writing Practicing various essay organizations
Short Course Content	Writing process, brainstorming, planning, drafting, revising, editing, paragraph writing, 5-paragraph essay, introduction, body and conclusion paragraphs, process essay, classification essay, cause-effect essay, comparison-contrast essay.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Ability to write paragraphs	7	1, 2, 6	A, B
2 Ability to write 5-paragraph or longer essays without borrowing information	7	1, 2, 6	A, B
3 Development of written communication skills	7	1, 2, 6	A, B
4 Introduction to professional composition writing	7	1, 2, 6	A, B
5			
6			
7			
8			
9			
10			

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Alice Oshima & Ann Hogue, "Longman Academic Writing Series 3," Pearson, 2017.
Supporting References	Stephen Bailey, "Academic Writing: A Handbook for International Students," Routledge, 2018.
Necessary Course Material	-

Course Schedule	
1	Introduction to the course, purpose and expectations
2	The writing process
3	Subject, purpose and audience
4	Brain storming
5	Developing paragraphs
6	Unity and coherence in paragraphs
7	Five-paragraph essay
8	Mid-Term Exam
9	Introduction and conclusion paragraphs
10	Process essay
11	Process essay practice
12	Classification essay
13	Cause/Effect essay
14	Cause/Effect essay practice
15	Comparison/contrast essay
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam	1	1	1
Studying for Quiz Exam	1	2	2
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	2	2
Final Exam	1	2	2
Studying for Final Exam	1	4	4
		Total workload	**69**
		Total workload / 30	**2.3**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Mid-term	35
Quiz	20
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	5
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Lecturer Seda ÜNER			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
SOFTWARE PROJECT MANAGEMENT	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
1	3	0	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	4			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The main objective of this course is to introduce students to fundamental principles of software project management, including planning, scheduling, risk management, cost estimation, and quality assurance. The course aims to provide an understanding of best practices in managing software projects effectively.
Short Course Content	Introduction to software project management, software project planning, scheduling techniques, risk management, cost estimation, software quality assurance, agile project management, and team dynamics.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Students will understand the fundamental concepts and best practices of software project management.	2, 3, 4, 10	1, 5, 10, 11	A
2	Students will learn various software project planning techniques and methodologies.	2, 4, 10	1, 5, 10, 11	A
3	Students will gain knowledge on project scheduling and resource allocation.	2, 10	1, 5, 10, 11	A
4	Students will comprehend risk management strategies in software projects.	2, 10	1, 5, 10, 11	A
5	Students will be introduced to cost estimation techniques and budget planning.	2, 4, 10	1, 5, 10, 11	A
6	Students will recognize the importance of quality assurance in software development.	2, 9, 11	1, 5, 10, 11	A
7	Students will develop teamwork and leadership skills within project management.	2, 6, 7, 10	1, 5, 10, 11	A
8				
9				
10				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Bob Hughes, Mike Cotterell, "Software Project Management," 6th Edition, McGraw-Hill, 2016, ISBN: 978-0077166795.
Supporting References	Ian Sommerville, "Software Engineering," 10th Edition, Pearson, 2015.
Necessary Course Material	Computer, projector.

Course Schedule	
1	Introduction to software project management.
2	Software development life cycle and project planning.
3	Project scheduling and resource allocation.
4	Risk management in software projects.
5	Cost estimation techniques and budgeting.
6	Software quality assurance and process improvement.
7	Agile methodologies in project management.
8	Mid-Term Exam
9	Project team management and leadership.
10	Communication and collaboration in software projects.
11	Change management and version control.
12	Software metrics and performance evaluation.
13	Ethical considerations in project management.
14	Future trends in software project management.
15	General review and preparation for final exam.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
		Total workload	**124**
		Total workload / 30	**4.13**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	5
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	3
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	4
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	5
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	2
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	2
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	5
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	2

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Aysun TOK ONARCAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
TURKISH II	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	2	0	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
			2	

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Providing information about the development and status of Turkish and proper use of the language in speech and in writing Instilling the importance of a national language
Short Course Content	Word classes, sentence and word order in Turkish, composition, types of oral and written composition, oral and written narration techniques, text (poetry, novel, story, article, etc.) analyses.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Knowledge on history and development of Turkish language	8	1	A
2 Knowledge on basic grammar of Turkish	7	1	A
3 Ability to write essays in Turkish	7	1	A
4			
5			
6			
7			
8			
9			
10			

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Ergin, M. (1997). Üniversiteler İçin Türk Dili. İstanbul: Bayrak Yayınları
Supporting References	Kaplan, M. (1993). Kültür ve Dil. İstanbul: Dergâh Yayınları (8. baskı)
Necessary Course Material	-

Course Schedule	
1	Word classes, word groups
2	Noun
3	Adjective
4	Pronoun
5	Adverb
6	Preposition, Conjunction, Exclamation
7	Verb
8	Mid-Term Exam
9	Sentence, Elements of Sentence
10	Types of Written Composition
11	Types of Written Composition
12	Prepared Speech Practice, Unprepared Speech Practice
13	Text Analysis Studies
14	Planned Composition Writing
15	Course Review
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	5	5
Final Exam	1	1	1
Studying for Final Exam	1	5	5
		Total workload	**54**
		Total workload / 30	**1.8**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Mid-term	50
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	5
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	3
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Lecturer Dr. İsmail Alperen BİÇER			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
CALCULUS II	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	4	0	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
5				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Teaching students the basic concepts, theorems of multivariable calculus and vector analysis and provide them the ability to solve related mathematical problems.
Short Course Content	Series and sequences. Polar coordinates. Coordinate systems. Vectors. Partial derivatives. Multiple integrals. Vector differential operators. Integration of vector fields.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Understanding series and sequences	1	1, 10	A, B
2 Defining various coordinate systems	1	1, 10	A, B
3 Applying basic operations on vectors and vector fields.	1	1, 10	A, B
4 Defining partial derivative and directional derivative.	1	1, 10	A, B
5 Applying partial derivative to certain problems.	1	1, 10	A, B
6 Defining multiple integrals.	1	1, 10	A, B
7 Applying multiple integrals to certain problems.	1	1, 10	A, B
8 Defining divergence and curl operators.	1	1, 10	A, B
9 Applying line and surface integration on vector fields.	1	1, 10	A, B
10			

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	J. R. Hass, C. E. Heil, M. D. Weir, P. Bogacki, Thomas' Calculus, Pearson, 15th ed., 2023.
Supporting References	J. Stewart, D. K. Clegg, S. Watson, Calculus, Cengage Learning; 9th ed, 2020.
Necessary Course Material	-

Course Schedule	
1	Sequences and infinite series. Convergence. Comparison tests. Ratio and root tests.
2	Alternating series. Absolute convergence. Power series. Taylor and Maclaurin series.
3	Parametric equations. Polar coordinates. Graphing in polar coordinates. Areas and lengths in polar coordinates.
4	Three dimensional coordinate systems. Vectors. Basic operations on vectors.
5	Vectors and analytical geometry.
6	Limits and continuity of multivariable functions.
7	Partial derivatives. Chain rule.
8	Mid-Term Exam
9	Directional derivatives. Gradients.
10	Extreme values and saddle points.
11	Double integrals. Finding limits of integration. Areas by double integration. Double integrals in polar form.
12	Triple integrals. Finding limits of integration. Triple integrals in cylindrical and spherical coordinates.
13	Integration in vector fields. Line integrals. Fundamental theorem for line integrals.
14	Divergence and curl. Parametric surfaces. Surface integrals.
15	Stokes theorem. Divergence theorem.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	4	56
Homework			
Quiz Exam	2	1	2
Studying for Quiz Exam	2	5	10
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	16	16
Final Exam	1	2	2
Studying for Final Exam	1	16	16
		Total workload	**160**
		Total workload / 30	**5.33**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	35
Quiz	20
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Dursun ESER			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PHYSICS II	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	3	0	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
3				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To teach students the fundamental laws and related problem solving approaches of electricity and magnetism; hence, to provide them the conceptual materials in order to comprehend the basic scientific foundations in associated novel academic research and emerging technological advancements.
Short Course Content	Electric charges, Coulomb's Law, electric field, Gauss's Law, electric potential, capacitance and dielectric materials, resistance and electric current, magnetic field, magnetic field sources, electromagnetic induction, Maxwell's equations.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Acquire the theoretical knowledge and to develop an understanding on their comprehensive applications on topics in electricity and magnetism.	1	1, 2, 5	A, K
2	To model and solve problems including engineering and advanced physics by using theoretical information and practical knowledge in electricity and magnetism.	1	1, 2, 5, 10	A, K
3	To realize the significance of the dielectric materials on capacitors through the proper understanding of electric field, electric potential, and capacitances.	1	1, 2, 5, 6	A
4	Getting to know simple electric circuits. Learn about current, resistivity, and electromotor force and their impact on electric circuits.	1	1, 2, 5, 6	A
5	To be able to analyze electric circuits by using Kirchhoff's laws upon the foundations of conservation of charges and energy.	1	1, 2, 4	A
6	To learn magnetic field, magnetic force, and sources of magnetic field; hence, grasp the correlation between the moving charges and magnetism.	1	1, 5	C, K
7	To be able to grasp the interconnection between electricity and magnetism; as changing magnetic field gives rise to an induced electric field, and vice versa.	1	1, 5	C, K
8	To be able to comprehend that how the electricity is generated in power plants using renewable energy sources by referring to the Maxwell's equations.	1	2, 4, 7	A, K
9	To grasp the impact of electricity and magnetism in modern technology and especially in electronics by starting from the visualization of the atomic structure and proceeding through step by step evolution of the developments of the utilization of free electrons.	1	1, 4, 7	K
10	To develop a capacity for analytical thinking and to get prepared for advance coursework related to the electricity and magnetism.	1	1, 2, 11, 13	A, K

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Young H.D., Freedman R.A. University Physics with Modern Physics, 14th Edition (2015), Pearson.
Supporting References	Halliday, D., Resnick, R., and Walker, J. (2008). Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. Serway, R.A., Beichner, R.J., Physics For Scientists and Engineers with Modern Physics (2007), Harcourt College Publishers.
Necessary Course Material	-

Course Schedule	
1	Atomic structure and electrical charges.
2	Coulomb's Law.
3	Electric field.
4	Gauss's Law.
5	Electric potential.
6	Capacitances.
7	Dielectric materials.
8	Mid-Term Exam
9	Electric current, resistance, and electromotor force.
10	Direct-current circuits.
11	Kirchhoff's laws.
12	Magnetic field and magnetic force.
13	Sources of the magnetic field.
14	Electromagnetic induction.
15	Maxwell's equations and electromagnetic waves.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	15	15
Final Exam	1	2	2
Studying for Final Exam	1	15	15
		Total workload	**90**
		Total workload / 30	**3**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Selçuk TEMİZ			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PHYSICS II LAB	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	0	2	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
2				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Teaching through conducting experiments on the topics related to the content of Physics II; hence, enhancing the students' perception and understanding on the important concepts and fundamental laws of electricity and magnetism.
Short Course Content	Numerical analysis and error calculation, fundamental measurements and Ohm's law, electrolysis, magnetic force, Ohm's law, electric field lines, Kirchhoff's rules and Wheatstone Bridge, alternating current circuits, transformers.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To enhance observational and analytical skills.	1, 11	13	C
2	Make measurements with common instruments.	4, 5	3	I
3	To analyze quantitative information and errors.	5	15	E
4	To represent experimental data by using graphics.	2, 5	15	E
5	To compare experimental results with mathematical and physical models, hence make an interpretation.	5	8	E
6	Prepare a lab report.	1, 2, 4, 5, 6	15	E
7	Develop teamwork skills.	6	12	C, E, I, K
8	Running essential measurement devices such as voltmeter, ammeter, signal generator, and oscilloscope. Comprehend the working principles of circuit components. Understanding the pivotal relationship between electricity and magnetism.	1	3	A, I
9	Encourage the curiosity for physics and improve the ability to apprehend the solid correlations between physics and engineering applications.	1	11	I
10	To obtain knowledge and experience on building basic experimental set ups upon need.	3, 4	3, 6, 10	I

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Physics II Experiments Laboratory Book, Eskişehir: Eskişehir Osmangazi Üniversitesi Yayınları, Sertaç Eroğlu, Murat Kellegöz, Gökhan Kılıç, Halil Yasin Adıyaman
Supporting References	Halliday, D., Resnick, R., and Walker, J. (2008). Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. Serway, R.A., Beichner, R.J., Physics For Scientists and Engineers with Modern Physics (2007), Harcourt College Publishers
Necessary Course Material	-

Course Schedule	
1	Introduction to laboratory, and formation of lab groups.
2	Electrolysis experiment.
3	Basic measurements and Ohm's Law Experiment.
4	Ohm's Law experiment
5	Wheatstone Bridge experiment
6	Equipotential and electric field lines experiment
7	Equipotential and electric field lines experiment
8	Mid-Term Exam
9	Magnetic force experiment
10	Biot-Savart Law Experiment
11	Transformers experiment
12	Resonance in Wire experiment
13	Resonance tube and standing waves experiment
14	Resonance tube and standing waves experiment
15	Make up experiment, general review and preparation for final exam.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)			
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	10	2	20
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam	1	2	2
Studying for Final Exam	1	10	10
		Total workload	**60**
		Total workload / 30	**2**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Report	50
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	2
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	2
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	2
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	2
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	3
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	2

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Selçuk TEMİZ			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
LINEAR ALGEBRA	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	3	0	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
3				

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts and techniques of linear algebra. Students will learn to solve systems of linear equations, understand vector spaces, linear transformations, and matrices, and apply these concepts to various problems in science, engineering, and other fields. The course aims to develop students' analytical and problem-solving skills, enabling them to model and solve real-world problems using linear algebraic methods.
Short Course Content	Linear Equations, Matrices, Solving Linear Systems, Determinants and Its Applications, Vector Spaces, Inner Product Spaces, Linear Transformations, Eigenvalues end Eigenvectors.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Students will gain proficiency in performing matrix operations, including addition, multiplication, and inversion, and will understand their applications in solving linear systems.	1,2	1,2,5,10,11	A
2	Students will be able to formulate, analyze, and solve systems of linear equations using various methods, including Gaussian elimination and Gauss-Jordan.	1,2	1,2,5,10,11	A
3	Students will understand the concept of determinants, learn how to compute them, and apply them to solve linear systems, understand matrix properties, and analyze geometric transformations.	1,2	1,2,5,10,11	A
4	Students will learn to define and work with vector spaces and subspaces, including understanding their properties, bases, dimensions, and spanning sets.	1,2	1,2,5,10,11	A
5	Students will understand inner product spaces, including the concepts of orthogonality, orthonormal bases, and projection, and will apply these concepts to solve geometric problems.	1,2	1,2,5,10,11	A
6	Students will comprehend the concept of linear transformations, learn to compute eigenvalues and eigenvectors, and apply these concepts to solve problems in various contexts, such as differential equations and stability analysis.	1,2	1,2,5,10,11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Bernard Kolman, David Hill. Elementary Linear Algebra with Applications, Pearson Education Press, 9th edition, 2012.
Supporting References	David C. Lay, Steven R. Lay, Judi J. McDonald. Linear Algebra and Its Applications. 2022, Sixth Edition, Pearson.
Necessary Course Material	

Course Schedule	
1	Linearity and Linear Equations
2	Matrices: Properties, Operations, Inverse Matrices
3	Solving Linear Equations
4	Determinants
5	Elementary Matrices, Applications of Determinants
6	Vectors
7	Vector Spaces: Definitions, Sample Vector Spaces
8	Midterm
9	Vector Spaces: Subspaces
10	Vector Spaces: Span, Basis, Dimension
11	Inner Product Spaces: Definitions, Axioms, Sample Problems
12	Inner Product Spaces: Orthogonality, Orthonormality, Orthonormal Basis
13	Homogeneous Systems, Coordinates and Isomorphisms
14	Linear Transformation, Change of Bases
15	Eigenvalues and Eigenvectors
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	20	20
		Total workload	**98**
		Total workload / 30	**3.2**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	3
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. Emrah ATILGAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
COMPUTER PROGRAMMING	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	3	0	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	4			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To gain the ability to write advanced programs with the C++ programming language.
Short Course Content	This course includes advanced applications of the C++ language, which is the programming language to be used for structured program design and program implementation. Students interpret how to design applications such as arrays, pointers, dynamic memory allocation, structures, files. In addition, this course aims to provide students with the ability to apply object-oriented programs.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Understanding advanced software development concepts.	3,4	1,5,10,11	A
2	Familiarize yourself with concepts and terminology to facilitate communication with software developers.	2,3,4	1,5,10,11	A
3	To develop the ability to read, follow and understand advanced C++ codes.	2,3	1,5,10,11	A
4	To be able to use one-dimensional and multi-dimensional arrays.	2	1,5,10,11	A
5	To use pointers.	2,4	1,5,10,11	A
6	Using strings.	2	1,5,10,11	A
7	To provide dynamic memory allocation.	2	1,5,10,11	A
8	Designing a structure.	2	1,5,10,11	A
9	Using files.	2	1,5,10,11	A
10	To be able to do Object Oriented Programming.	2	1,5,10,11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	H.M. Deitel, P.J. Deitel, I. Pohl, C: How To Program, 2013.
Supporting References	Lecture notes and slides.
Necessary Course Material	Accessible computers for each student, Visual Studio 2013 or later, projection

Course Schedule	
1	Summary.
2	Arrays and Matrices.
3	Pointers.
4	Pointer expressions and pointer arithmetic.
5	Pointer-array.
6	Characters and strings.
7	Character handling library and functions.
8	Mid-Term Exam
9	Dynamic memory allocation.
10	Structures
11	Structures
12	Unions.
13	File Processing.
14	Object-Oriented Programming.
15	Object-Oriented Programming.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
		Total workload	**124**
		Total workload / 30	**4.13**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	2
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	5
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	3
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	3
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. İbrahim SAVRAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
COMPUTER PROGRAMMING LAB	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	0	2	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	2			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To gain the ability to write advanced programs with the C++ programming language.
Short Course Content	This course includes advanced applications of the C++ language, which is the programming language to be used for structured program design and program implementation. Students interpret how to design concepts such as arrays, pointers, dynamic memory allocation, structs, files, and object-oriented programming.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To gain software development skills.	2,4	1,5,6,11,14,15	D,J
2	Familiarize yourself with concepts and terminology to facilitate communication with software developers.	2,4	1,5,6,11,14,15	D,J
3	To improve the ability to read, follow and understand advanced codes.	2,4	1,5,6,11,14,15	D,J
4	Understanding how to write, test and debug programming code for several problems.	2,4,5	1,5,6,11,14,15	D,J
5	To be able to use one-dimensional and multi-dimensional arrays.	2,4	1,5,6,11,14,15	D,J
6	Using pointers.	2,4	1,5,6,11,14,15	D,J
7	Using strings.	2,4	1,5,6,11,14,15	D,J
8	To provide dynamic memory allocation.	2,4	1,5,6,11,14,15	D,J
9	Designing a structure.	2,4	1,5,6,11,14,15	D,J
10	Using files.	2,4	1,5,6,11,14,15	D,J
11	Developing programs with Object Oriented Programming.	2,4	1,5,6,11,14,15	D,J

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	H.M. Deitel, P.J. Deitel, I. Pohl, C: How To Program, 2013.
Supporting References	Lecture notes and slides.
Necessary Course Material	Accessible computers for each student, Visual Studio 2013 or later, projection

Course Schedule	
1	Laboratory introduction and summary.
2	Array and matrix applications.
3	Pointers applications.
4	Pointer expressions and implementation of pointer arithmetic.
5	Co-implementation of pointer-arrays.
6	Strings applications.
7	Implementation of standard string library and functions.
8	Mid-Term Exam
9	Dynamic memory allocation applications.
10	Application of structs and type definitions.
11	Application of structs and type definitions.
12	Union applications.
13	File I/O applications.
14	Object-oriented programming applications.
15	Object-oriented programming applications.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam	7	1	7
Studying for Quiz Exam	7	1	7
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	1	5	5
Project (Preparation and presentation time included)	1	15	15
Presentation (Preparation time included)			
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam			
Studying for Final Exam			
		Total workload	**76**
		Total workload / 30	**2.53**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Quiz	70
Project Observation	30
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	5
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	5
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	2
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTUTER(S)				
Prepared by	Asst. Prof. Dr. İbrahim SAVRAN			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ADVANCED READING AND WRITING II	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	3	0	2

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
			2	

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Teaching how to access sources Teaching how to cite and document sources Teaching how to write an academic paper Awareness about plagiarism Writing a paper on current issues that concern the society including health, environment and energy issues.
Short Course Content	Borrowing information from sources, direct quote, paraphrase, summary, intext citations, use of index cards, reliability of the sources, outline, introduction paragraph, body and conclusion paragraphs, style for references, page layout, writing a 5-6 page paper on topics related to health, environment and energy sources.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Development of written communication skills	7	1, 2, 6	A, B, E
2	Development of writing skills for summaries, paraphrases, and direct quotes	7	1, 2, 6	A, B, E
3	Planning for a paper	7	1, 2, 6	A, B, E
4	Documenting the sources that the information is borrowed from	7	1, 6, 15	A, B, E
5	Introduction to professional authorship	7	1, 6, 15	A, B, E
6	Acquiring awareness about environment, health and energy issues through the research and writing	11	1, 6, 15	E
7				
8				
9				
10				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Stephen Bailey, "Academic Writing: A Handbook for International Students," Routledge, 2018.
Supporting References	Alice Oshima & Ann Hogue, "Longman Academic Writing Series 4," Pearson, 2017.
Necessary Course Material	-

Course Schedule	
1	Introduction to the course
2	Sources of information, Critical analysis of sources
3	Borrowing information from sources
4	Forms of borrowed information
5	Paraphrasing
6	Paraphrasing practice
7	Summaries
8	Mid-Term Exam
9	Blending source information into own writing
10	Research for the topic
11	Developing a thesis statement
12	Planning and Organization
13	Synthesis
14	Revision
15	Printed page format and course review
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework			
Quiz Exam	1	1	1
Studying for Quiz Exam	1	2	2
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	1	8	8
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	2	2
Final Exam			
Studying for Final Exam			
		Total workload	**71**
		Total workload / 30	**2.36**
		Course ECTS Credit	**2**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	25
Bir öğe seçin.	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam (report)	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	1
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	1
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	1
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	1
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	5
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	1
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	3

LECTUTER(S)				
Prepared by	Lecturer Seda ÜNER			
Signature(s)				

Date: 15.05.2025

ESOGU SOFTWARE ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
DISCRETE COMPUTATIONAL STRUCTURES	

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
2	3	0	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
3	1			

Course Language	Course Level	Course Type
English	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To examine the fundamentals of counting, various combinatorial methods, algorithmic thinking, implementation and modeling.
Short Course Content	Fundamentals of Counting; Sets; Combinatorial Methods: Induction Principle, Inclusion-Exclusion Principle, Pigeonhole Principle; Binomial Coefficients and Pascal's Triangle: Fibonacci Numbers; Combinatorial Probability; Integers, Divisibility and Prime Numbers; Graphs; Trees

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Will be able to express the fundamentals of counting and use them in solving various problems.	PO1	1,2,5,11,13	A
2	Can explain the concept of combination and calculate the number of subsets of a given set with the desired number of elements with the help of this concept.	PO1	1,2,5,11,13	A
3	Can express the number of all subsets of sets having a finite number of elements and can cite various proofs of this result.	PO1	1,2,5,11,13	A
4	Will be able to list combinatorial methods and relate these methods to given problems.	PO1	1,2,5,11,13	A
5	Can express methods such as induction, inclusion-exclusion, etc. and solve related problems using these methods.	PO1	1,2,5,11,13	A
6	Can understand and relate the principles of data structures used in computer science and engineering.	PO2, PO3, PO5, PO8	1,2,5,10,11,13	A
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Lovász, L., Pelikán, J. & Vesztergombi, K. (2003) Discrete Mathematics Elementary and Beyond. Springer.
Supporting References	Example questions
Necessary Course Material	Computer, projection

Course Schedule	
1	orientation, definition, syllabus, and material
2	Fundamentals of Counting
3	Fundamentals of Counting
4	Combinatorial Methods
5	Binomial Coefficients and Pascal's Triangle
6	Fibonacci Numbers
7	Combinatorial Probability
8	Mid-Term Exam
9	Integers, Divisors, and Prime Numbers
10	Integers, Divisors, and Prime Numbers
11	Graphs
12	Trees
13	The Traveling Salesman Problem
14	Mapping in Graphs
15	overview, question examples, and Q/As
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	12	3	36
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	20	20
		Total workload	**120**
		Total workload / 30	**4**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	47
Final Exam	53
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	Basic Science: Adequate knowledge of mathematics, science and basic engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Engineering	5
2	Software Engineering: An ability to identify, describe, formulate and solve problems in Software Engineering and related fields; for this purpose having skills to choose and apply proper analysis and modeling methods	4
3	Design: An ability to design a complex system, process and component with modern design methods to meet desired needs within realistic constraints.	2
4	Tool Usage: An ability to develop, select and apply modern techniques and tools needed for Engineering applications.	1
5	Testing and Analysis: An ability to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Software Engineering problems.	2
6	Team work: An ability to function within the discipline and on multidisciplinary teams effectively.	1
7	Communication Skill: Communicating effectively in oral and written form in Turkish and one foreign language.	1
8	Lifelong Learning: Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewal continually.	3
9	Ethic: Understanding of professional and ethical responsibility	1
10	Entrepreneurship and Project Management: Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1
11	Environment: Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1

LECTURER(S)				
Prepared by	Asst. Prof. Dr. Savaş OKYAY			
Signature(s)				

Date: 15.05.2025