OSTİM TECHNICAL UNIVERSITY
ENGINEERING FACULTY

CENG 306 FUNDAMENTALS OF SOFTWARE ENGINEERING
2021-2022 ACADEMIC YEAR

CENG 306 Fundamentals of Software Engineering							
Course Name	**Course Code**	**Term**	**Hour**	**Practice**	**Lab**	**Credit**	**ECTS**
Fundamentals of Software Engineering	CENG306	1	3	0	0	3	5

Precondition	No
Language of the Course	English
Type of Course	Compulsory
Course Level	Undergraduate
Method of Teaching	Face to face, Distance Learning
Course Learning and Teaching Techniques	Lecture, Question and Answer, Practice

Purpose of the Course
The aim of this course is to explain the importance of the Software Engineering department and its related disciplines. In addition, it is an introduction to the main subjects, which are the foundations of software engineering, and some of the other courses that will be encountered in the coming years.

Learning Outcomes	
Students who successfully complete this course can learn;	
1.	The general concepts of the computer and how it works in general.
2	Will be able to plan appropriate solutions to the technical problems he/she will encounter. Can make evaluations for the solution of an existing problem and develop systematic applications.
3	To plan an algorithmic solution to a problem.
4	How to access information sources.
5	Programming languages and number coding systems.
6	It contributes to science by critically analyzing the information it reaches.

7	To present the acquired knowledge clearly.
8	To obtain knowledge of computer and software systems security.
9	To Have basic knowledge of operating systems and databases.
10	To understand, analyze and apply the acquired knowledge.

Course Content
Computer concepts, problems, algorithms, programming languages, numerical coding systems, software, operating systems and databases.

Weekly Plan and Related Preparation Studies		
Week	**Subjects**	**Preparation**
1	**The concept of computer**, its relationship with software and its historical development: The aim of this course is to have knowledge about computer and computer history, to examine computer hardware and input/output units, and to show the connection between computer software and computer hardware.	General computer concepts can be explored.
2	**Definition of the problem** and solution phases: In this week's course, the problems faced by software and computer engineers, these problem solving steps and post-solution testing processes will be explained. In addition, the first stage of algorithm design, flow diagrams will be introduced.	Problem solving stages can be examined.
3	**Algorithm concept**: This week, the basic and widely used methods in computer systems and the application of these methods on problems will be shown.	Sample algorithms can be viewed.
4	**Software engineering**, ethics, institutions and organizations: The scope and social value of the Software Engineering discipline will be mentioned. The working subjects and areas of specialization of Software Engineers will be explained. In addition, interactions with other engineering and engineering ethics will be explained. National and international organizations that Software Engineers can enroll in will also be covered in this course.	International organizations can be searched through search engines.
5	**Methods of accessing information**: This week's course will cover both traditional methods of accessing information, such as learning from print sources, as well as new types of information access methods and digital data sources.	The website of the library of the institution can be examined.
6	**Programming languages**: In this course, the history of programming languages, different programming languages and their usage purposes will be discussed. In addition, the types of errors encountered while writing code with the programming language will also be mentioned.	The general logic of programming languages can be explored.

7	**Number and coding systems**: Number and coding systems, which form the basis of computers and microprocessors, are the subject of this week.	Binary and triple number systems can be explored.
8	**Midterm**	
9	**Boolean algebra and logic gates**: Boolean algebra and logic gates, which are the basis of computer systems, will be covered in this course.	
10	**Software and software types**: The features and examples of software types will also be mentioned in this week.	Software types can be examined.
11	**Computer and software security**: Computer and software security issues will be mentioned. Also, dangerous software and viruses will be explained this week.	Up-to-date software security tools can be researched.
12	**Operating systems**: In this course, the types, history and structures of operating systems will be discussed.	Operating systems and their differences can be researched.
13	**Data structures and models**: In this course, data structures and data models used in software will be discussed.	
14	**Database systems**: In this course, different database systems and the development of database systems will be discussed.	
15	**Computer networks**: In this course, the concepts of computer networks that enable computers to communicate with each other will be discussed.	How the Internet works can be researched.
16	**Final exam**	General computer concepts can be explored.

Resources (Textbook)
Introduction to Software Engineering, Sommerville Pearson, 2012, ISBN: 1486002587, 9781486002580
Computer Science: A Very Short Introduction, Subrata Dasgupta, 2016, 978-0198733461, Oxford Press
Introduction to Computer Science: A Textbook for Beginners in Informatics, Gilbert Brands, 2013, 978-1492827849, CreateSpace Independent Publishing Platform
Concise Introduction to Software Engineering, Pankaj Jalote , 2008, 978-1848003019, Springer
Introduction to software engineering Ronald J Leach, 2000, CRC Press, International Edition, ISBN: 978-0849314452

Evaluation System		
Studies	Number	Contribution
Attendence		
Lab		
Application		
Field Study		
Course Specific Internship (if applicable)		
Quizzes/Studio/Critical		
Homework		
Presentation		
Projects		
Report		
Seminar		
Midterm Exams/Midterm Jury	1	% 40
General Exam/Final Jury	1	% 60
	Total	**% 100**

		% 40
Contribution of Mid-Semester Studies to Success Grade		% 40
Contribution of End of Semester Studies to Success Grade		% 60
	Total	**% 100**

Course Category	
Basic Vocational Courses	X
Specialization/Field Courses	
Support Lessons	
Communication and Management Skills Lessons	
Transferable Skills Lessons	

No	Course Learning Outcomes and Program Qualifications					
	Program Qualifications / Outcomes	Contribution Level				
		1	2	3	4	5
1	To know the concepts of computer				X	
2	To be aware of the general architecture of software engineering education.					X
3	An ability to know the mathematical systems that form the foundations of the software.				X	
4						
5						

ECTS/Workload Table			
Aktiviteler	Count	Duration (Hours)	Total Workload
Lesson hours (Including the exam week: 16 x total lesson hours)	16	3	48
Lab			
Application			
Course Specific Internship			
Field Study			
Out of Class Study Time	16	2	32
Presentation/Seminar Preparation			
Projects			
Reports			
Homeworks			
Quizzes/Studio Critic			
Preparation Time for Midterm Exams/Midterm Jury	1	15	15
Preparation Time for the General Exam/General Jury	1	25	25
Total Workload	**(120/30 = 4)**		**120**