OSTIM TECHNICAL UNIVERSITY
FACULTY OF ENGINEERING

COURSE SYLLABUS
FALL 2021-2022

CENG 103 – Computer Programming 1						
Course Name	**Course Code**	**Weekly Hours**			**Credit**	**ECTS**
		Theory	**Application**	**Laboratory**		
Computer Programming 1	CENG 103	3	2	0	4	5

Instructors	**Contact Information**
Prof. Dr. Serdar MÜLDÜR	serdar.muldur@ostimteknik.edu.tr
Asst. Prof. Dr. Akif Hacınecipoğlu	akif.hacinecipoglu@ostimteknik.edu.tr
Assist. Prof. Dr. Yücel TEKİN	yücel.tekin@ostimteknik.edu.tr
Teaching Assistants	**Contact Information**
Ar. Gör. Emine Aşar	emine.asar@ostimteknik.edu.tr

Language of Instruction	English
Course Status	Compulsory
Course Level	Undergraduate
Learning and Teaching Techniques	Lecture, Discussion, Question Answer, Practice
Prerequisites	None

Course Objectives

This course gives a brief introduction to programming language constructs, solving algorithmic problems, and basic data structures in C. It is designed as a first course of programming and supported by laboratory sessions.

Learning Outcomes

1. An ability to apply knowledge of science, mathematics, andengineering.
2. An ability to design programs andalgorithms
3. An ability to work with multi-disciplinaryteams.
4. An ability to identify, formulate, and solve engineeringproblems.
5. Takeresponsibilitytosolveunpredictableandcomplexproblemsencounteredinapplicationsasan individual and as a member of ateam
6. Plan and manage activities inteamwork
7. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
8. Can do research on interdisciplinaryfields.

Course Outline

Introductory Concepts of Computing: Historical Overview and Contents of Computing. Automatic problem solving: algorithms, representation languages, programming chain. Programmable digital calculator: basic

elements of electronic technology. Nature and representation of information (numerical, alphanumeric, images, multimedia).
Fundamental concepts of programming: Introduction to algorithms: representation of the control flow. Introduction to design for subsequent refinements.
Fundamentals of programming in C language and in a language for numerical computation - Abstraction mechanisms: Structure of a C program. Data abstraction through data types (numbers, characters and strings, vectors, structures). Structured mechanisms for controlling the execution sequence. The standard libraries of the C language and the input and output functions.
Programming techniques in a language for numerical computation: The concept of subprogram: functions and procedures as abstractions. Parameters, how to pass parameters, effect of a subroutine. File management. Management of matrices. Graphic visualization techniques.
Introductory concepts of advanced programming: Introduction to recursion. Functional parameters and higher order functions.
Compositionandorganizationofcomputersystems:Structureofacomputer(functionalunitsanduse)and classification of computers. Basic structure of a computer network. Introduction to operating system functions and networksoftware.

Weekly Topics and Related Preparation Studies		
Weeks	**Topics**	**Laboratory**
1	Introduction to Computers, Operating Systems, Algorithms and Programming	Tutorial on IDE installation
2	Flow Charts, C Programming Language Syntax, Data Types, Arithmetic Operators, Standard Inputs and Outputs	Tutorial on Arithmetic Operators
3	Format Specifiers, Operators, Control Structures - If Statements	Tutorial on If Statements
4	Control Structures Cont'd – If Else Statements, Nested Conditional Statements, Switch Statement	Assignment on If Else and Switch Statements
5	Repetition Structures: While and Do While Statements	Homework on While and Do While Statements
6	Repetition Structures: For Statements, break and continue Statements, Type Conversion and Casting	Assignment on For Statements
7	Functions, C Standard Library, Math Library	
8	**Midterm Exam**	Tutorial on Functions and Math Library
9	User-defined Functions, Scopes of Variables and Parameters	Homework on User-defined Functions
10	Random Numbers, Enumeration, Recursion	Assignment on Random Numbers and Enumeration
11	Arrays, Examples on Arrays	Homework on Arrays
12	Passing Arrays to Functions, Sorting Arrays, Searching Arrays	Assignment on Array Operations
13	Pointers, Pass-by-value, Pass-by-reference, Character Arrays and Strings	
14	Character and String Input Output Functions, String Library	Homework on Pointers and Strings
15	File Processing, Creating, Writing and Reading Sequential-Access Files	
16	**Final Exam**	

Textbook(s) / References / Materials			
Title	**Authors**	**Edition**	**Publisher**
C: How to Program,- International Edition	H. Deitel, P. Deitel	7	Prentice Hall

Assessment		
Studies	**Number**	**Contribution (%)**
Attendance	14	5
Lab	4	10
Application		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical		
Homework	4	10
Presentation		
Projects		
Report		
Seminar		
Midterm Exams / Midterm Jury	1	30
General Exam / Final Jury	1	45
	Total	**100**
Success Grade Contribution of Semester Studies		
Success Grade Contribution of End of Term		
	Total	**100**

Relationship Between Course Learning Outcomes and Program Competencies							
	Learning Outcomes	**Contribution Level**					
		1	**2**	**3**	**4**	**5**
1	An ability to apply knowledge of science, mathematics, and engineering.				x	
2	An ability to design programs and algorithms					x
3	An ability to work with multi-disciplinary teams.			x		
4	An ability to identify, formulate, and solve engineering problems.				x	
5	Take responsibility to solve unpredictable and complex problems encountered in applications as an individual and as a member of a team				x	
6	Plan and manage activities in teamwork				x	
7	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.				x	
8	Can do research on interdisciplinary fields.			x		

ECTS / Workload Table			
Activities	**Number**	**Duration(Hours)**	**TotalWorkload**
Course hours (Excluding the exam weeks)	14	3	42
Laboratory	10	2	20
Application			
Course-Specific Internship			
Field Study			

Study Time Out of Class	14	2	28
Presentation / Seminar Preparation			
Projects			
Reports			
Homeworks	4	3	12
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	15	15
Midterm Exams / Midterm Jury	1	2	2
Preparation Period for the Final Exam / General Jury	1	25	25
Final Exam / General Jury	1	2	2
Total Workload			**146**