

**INTRODUCTION to PROGRAMMING and ALGORITHMS**

**Syllabus**

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
INTRODUCTION to PROGRAMMING and ALGORITHMS	MIS1271290	Spring Semester	3+0	3	6
<b>Prerequisites Courses</b>					
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Assist.Prof. Kevser ŞAHİNBAŞ				
<b>Name of Lecturer(s)</b>	Assist.Prof. Kevser ŞAHİNBAŞ				
<b>Assistant(s)</b>					
<b>Aim</b>	The aim of this course is to enable the students to learn the programming logic and the machine instruction and execution method. It also aims to teach computer programming using the C# programming language and to develop problem solving methods while designing program solutions. In the course, students will be introduced to principles such as procedural programming, data types, control structures, functions, data representation formats. Other topics include file access methods, arrays, strings, and modular programming.				
<b>Course Content</b>	This course contains; Introduction to programming, definition and purpose of programming,History of computers and programming,Types of programs, compilers, linkers, debugging principles,Program development process and program design, flow chart,Software development life cycle,Algorithms: What is an algorithm? Types of algorithms,Algorithms: Problems and problem solving; pseudocodes,Flowcharts,Building First Application in C#, Declaring variables and assigning values, The if Decision Statement, Variable Scope,Principles of Programming: Arithmetic and logical expressions,Introduction to the .NET Framework, Operators, Expressions and Statements, Data Types, Switch Statement and Conditional Operator, for Iterations, Arrays,Principles of Programming: Data types, variables and data processing,Principles of Programming: Arrays, loops and functions,List, dictionary, Do..while, switch case,Example programs in C# language. Writing programs from algorithms.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
1. Explains the definition of programming and program types.			6, 9	A	
1.1. Knows the basic concepts of programming.			6	A, F	
1.2. Knows variable concept and data types used in programming.			9	A, F	
1.2. Students can define and determine what computer hardware and software are, and explain and apply the Software Development Method.			6, 9	A	
1.3 Students can distinguish different data types (integer, float, character, string, string).			6	F	
2. Will be able to create flowcharts using algorithms			6	A, F	
2.1. Knows the concept of algorithm.			6	A, F	
2.2. Improves the algorithm.			6	F	
2.3 Students can create and prepare problem solving strategies (algorithms) before starting to solve problems by writing computer programs.			6, 9	F	
3. Will be able to discuss the figures and tasks in flow charts.			6	F	
3.1. Shows the generated algorithm with flow charts.			9	A	
3.2. Interprets the generated flow diagram.			9	A	
4. Will be able to do basic program design.			12, 6	A, F	
4.1. Creates solution steps (algorithm) for any problem.			6	F	
5. Will be able to discuss compilers and linkers			6	A, F	
5.1. Knows compiler concept.			6	A	
5.2. Knows the concept of interpreter.			9	A	
6. Will be able to discuss the steps in program development and their functions			14, 6	F	
6.1. Knows control structures, looping, arrays, character sequences.			6, 9	F	
6.2. Knows the programming such as functions and equations.			6, 9		
7. Will be able to develop and compile simple programs using basic programming principles			6	F	
7.1. Develops a small application.			2	A, F	
8. Students can list and use different programming building blocks (consecutive, selection, loop statements) of the C programming language.			6	F	
<b>Teaching Methods</b>	12: Problem Solving Method, 14: Self Study Method, 2: Project Based Learning Model, 6: Experiential Learning, 9: Lecture Method				
<b>Assessment Methods</b>	A: Traditional Written Exam, F: Project Task				
<b>Lecture Schedule</b>					
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Introduction to programming, definition and purpose of programming				
2	History of computers and programming				
3	Types of programs, compilers, linkers, debugging principles				
4	Program development process and program design, flow chart				
5	Software development life cycle				
6	Algorithms: What is an algorithm? Types of algorithms				
7	Algorithms: Problems and problem solving; pseudocodes				
8	Flowcharts				
9	Building First Application in C#, Declaring variables and assigning values, The if Decision Statement, Variable Scope				
10	Principles of Programming: Arithmetic and logical expressions				

<b>Lecture Schedule</b>		
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>
11	Introduction to the .NET Framework, Operators, Expressions and Statements, Data Types, Switch Statement and Conditional Operator, for Iterations, Arrays, Principles of Programming: Data types, variables and data processing	
12	Principles of Programming: Arrays, loops and functions	
13	List, dictionary, Do..while, switch case	
14	Example programs in C# language. Writing programs from algorithms	
<b>Evaluation Methods</b>		<b>Weight(%)</b>
(Midterm Exam) Project for Midterm		20
Midterm Exam		40
(General Exam) Question from projects (%20) in the General Exam		20%
General Exam		60

<b>Resources</b>
P.J. Deitel & H. M. Deitel (2013).C How to Program,7th Edition, Prentice-Hall., ISBN: 978-0132990448Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, ISBN: 9780262046305, 2022, The MIT Press.  Algorithms, Robert Sedgewick and Kevin Wayne, 2022.