

<b>Course title</b>	<b>Code</b>	<b>semester</b>	<b>T+U</b>	<b>credit</b>	<b>ECTS</b>
Data Structures		3	3+ 0	3	5
<b>Prerequisite Courses</b>	None				
<b>Language of the Course</b>	English				
<b>Course Level</b>	Undergraduate				
<b>Type of Course</b>	Compulsory				
<b>Course Coordinator</b>					
<b>Instructors</b>					
<b>Course Assistants</b>					
<b>The aim of lesson</b>	Presenting basic data structures designed to store and access information in computer memory. design, analysis and development of students' basic data structures to have knowledge and skills on the subject.				
<b>Course Content</b>	Data concept and data types, Lists, Queue, Stack , binary tree and application areas, compression algorithms, Sorting algorithms, search algorithms and hash tables , Classification of data structures, introduction to algorithm and complexity analysis, lists, basic data structures and their derivatives, such as stacks , queues, trees, graphs, and stacks, analysis of key sorting algorithms, program using dynamic memory allocation emphasis on writing, practical exercises in laboratories and programming homework.				
<b>Course Learning Outcomes</b>	<p>Students who successfully complete this course;</p> <ol style="list-style-type: none"> <li>1. Choosing the appropriate data structure</li> <li>2. Analyzing algorithms</li> <li>3. Data abstraction capability</li> <li>4. More efficient programming</li> <li>5. Sufficient knowledge of sequential algorithm analysis; ability to analyze sequential algorithms.</li> <li>6. lists, stacks , queues, trees, graphs and stacks; the ability to use basic data structures for problem solving.</li> <li>7. Ability to use and compare data structures in different application areas.</li> <li>8. Ability to use necessary tools for application design and development</li> </ol>				
<b>Weeks</b>	<b>Topics</b>				
one	Basic data types and data concept , List data structure and applications				
2	linked list, bidirectional lists, unidirectional linked lists , Stack data structure and applications				
3	Queue data structure and applications , Priority queue and Heap tree				
4	Tree data structure and applications , Binary search trees and applications				
5	Data Compression algorithms , Sorting methods ( Insertion , Selection , Bubble )				
6	Sorting methods ( Merge , Quick , Heap ) , Search Methods				
7	Hash tables				
8	Graph data structures				
9	Algorithm Complexity , Recursion, Abstract Data Structures				
10	Stacks and Queues				
11th	Linked Lists and Trees				
12	Binary Search Trees and Snap Functions				
13	heaps				
14	charts				
15	Algorithm Complexity				
<b>General Competencies</b>					
Designing and choosing the appropriate data structure					
<b>resources</b>					

R. ÇÖLKESEN, "Data structures and algorithms", Papatya publishing, 2002.  
 Allen M., (1999). data structures and problem solving using C++, Addison Wesley .  
 Ford W. & Topp W., (2002). data structures with C++ , Prentice Hall

**Evaluation System**

The dates, days and hours of the Midterm Exam, Quiz, Final Exam and Evaluations will be announced later, according to the decision of the Faculty Administrative Board.

WITH PROGRAM LEARNING OUTCOMES											
COURSE LEARNING OUTCOMES RELATIONSHIP TABLE											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
LO1	5	5	5	5	4	4	4	5	5	4	4
LO2	4	4	4	4	4	3	3	3	5	3	4
ÖK3	5	5	5	4	5	3	3	3	3	3	3
ÖK4	5	4	5	3	5	4	3	3	3	3	3
ÖK5	5	5	5	4	5	3	3	3	3	3	3
OK6	5	5	5	5	4	4	4	5	5	4	4
OK7	5	4	4	4	4	3	3	3	5	3	5
OK8	5	4	5	4	5	3	3	3	3	3	3
<b>LO: Learning Outcomes OP: Program Outcomes</b>											
<b>Contribution Level</b>	<b>1 Very Low</b>		<b>2 Low</b>		<b>3 Medium</b>		<b>4 High</b>		<b>5 Very High</b>		

**Relation of Program Outcomes and Related Course**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
<b>Data Structures 1</b>	5	5	5	4	5	3	4	4	3	4	3

