Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF224	Algorithms And Data Structures	3	3	0	2	3	4

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	The main aim of the course is to enable the student to select the most suitable data structure for various data types, to use these data structures within algorithms, to perform performance analyzes of written algorithms and to encode data structures and related algorithms in a selected computer language. The course content can be summarized as follows: - Different types of data examples are shown to students, the differences are emphasized. - Ability to think of an algorithm as a function. - It is taught to compare two given algorithms in terms of performance. - Students learn to make different data structures in computer language. - Students learn to visualize data structures visually. - Students learn to use the data structures they learn in algorithms.
Content	Week 1: Algorithm analysis. Week 2: Principal data structures (arrays, linked lists, queues). Week 3: Tree structures, binary search tree. Week 4: AVL tree structure. Week 5: Tree traversal algorithms. Week 6: Hash functions and tables. Week 7: Graph structure. Week 8: Midterm. Week 9: Graph algorithms (shortest path, minimum spanning tree). Week 10: Sorting algorithms. Week 11: Sorting algorithms. Week 12: Search algorithms. Week 13: Compression algorithms. Week 14: Coding algorithms.
References	1. M.A. Weiss, Data Structures & Algorithm Analysis in C++, 1999, Addison Wesley. 2. A.M. Tanenbaum, Data Structures using C, 1989, Prentice Hall. 3. A. Drozdek, Data Structures and Algorithmss in C++, 2004, Course Technology. 4. R. Sedgewick, Algorithms in C, Parts 1-4: Fundamentals, Data Structures, Sorting, Searching, 1997, Addison-Wesley. 5. Olcay Taner Yıldız, C && Java ile Veri Yapılarına Giriş, Boğaziçi University Press, 2013.

Theory Topics

Week	Weekly Contents
1	Overview.
2	Applications of principal data structures.
3	Applications of tree structures, binary search tree.
4	Applications of AVL tree.
5	Applications d'algorithmes de parcours d'arbres.
6	Applications of hash function and table.
7	Applications of graphs.
8	Midterm.
9	Applications of graph algorithms (shortest path, minimum spanning tree).

Week	Weekly Contents
10	Applications of soritng algorithms.
11	Applications of soritng algorithms.
12	Applications of searching algorithms.
13	Applications of coding and compression algorithms.
14	Project presentations.