COURSE INFORMATION					
Course Title	*Code*	*Semester*	*L+P Hour*	*Credits*	*ECTS*
DATA STRUCTURES	**CSE211**	**3**	**3 + 3**	**4**	**6**

Prerequisites	CSE114 – FUNDAMENTALS OF COMPUTER PROGRAMMING

Language of Instruction	English
Course Level	Bachelor's Degree (First Cycle Programs)
Course Type	Compulsory
Course Coordinator	
Instructors	Assist. Prof. Onur Demir
Assistants	Çağrı Yeşil
Goals	The aim of this course is to provide students with knowledge and abilities to design, analyze and implement basic data structures.
Content	Classification of data structures, introduction to algorithms and their complexity, fundamental structures such as lists, stacks, queues, trees, graphs, heaps and their variations, analysis of important sorting algorithms, emphasis on writing and running programs using dynamic memory allocation, practice exercises in lab sessions, term project.

Course Learning Outcomes	**Program Learning Outcomes**	**Teaching Methods**	**Assessment Methods**
1) Adequate knowledge in sequential algorithm analysis; ability to analyze sequential algorithms.	1,2	1,2,3	A, C, D
2) Ability to analyze, design, and implement lists, stacks, queues, graphs, binary search trees and heaps; ability to use basic data structures for solving problems.	1,2,6	1,2,3	A, C, D
3) Ability to use, compare, and contrast the data structures in various application areas.	5,6	1,2,3	A, C, D
4) Ability to use tools needed for the design and implementation of applications.	4,6	1,2,3	A, C, D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study
Assessment Methods:	A: Testing, B: Experiment, C: Homework, D: Project

COURSE CONTENT		
Week	**Topics**	**Study Materials**
1	ALGORITHM COMPLEXITY	Textbook, Lecture Notes
2	RECURSION, ABSTRACT DATA TYPES	Textbook, Lecture Notes
3	STACKS	Textbook, Lecture Notes
4	QUEUES, MIDTERM I	Textbook, Lecture Notes
5	LINKED LISTS	Textbook, Lecture Notes
6	LINKED LISTS II	Textbook, Lecture Notes
7	GRAPHS I	Textbook, Lecture Notes
8	GRAPHS II, MIDTERM II	Textbook, Lecture Notes
9	TREES	Textbook, Lecture Notes
10	BINARY SEARCH TREES	Textbook, Lecture Notes
11	HEAPS	Textbook, Lecture Notes
12	SORTING ALGORITHMS I	Textbook, Lecture Notes
13	SORTING ALGORITHMS II	Textbook, Lecture Notes
14	REVIEW	Textbook, Lecture Notes

RECOMMENDED SOURCES	
Textbook	Data Structures – A Pseudocode Approach with C, R. Gillberg, B. Forouzan, Thomson Course Technology Second Edition
Additional Resources	Lecture Notes: http://cse.yeditepe.edu.tr/v2/en/academic/course-pages

MATERIAL SHARING	
Documents	
Assignments	
Exams	

ASSESSMENT		
IN-TERM STUDIES	**NUMBER**	**PERCENTAGE**
Mid-terms	2	54
Assignment	5	6
Lab Work	12	20
Term Project	1	20
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		25
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		75
Total		**100**

COURSE CATEGORY	Expertise/Field Courses

COURSE'S CONTRIBUTION TO PROGRAM							
No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.					**X**
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.					**X**
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.					
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.		**X**			
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.		**X**			
6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.		**X**			
7	Ability to communicate effectively both orally and in writing; knowledge of a minimum of one foreign language.					
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.					
9	Awareness of professional and ethical responsibility.					

10	Information about business life practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.					
11	Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety; awareness of the legal consequences of engineering solutions.					

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 12x Total course hours)	12	6	60
Hours for off-the-classroom study (Pre-study, practice)	14	4	42
Midterm examination	2	2	4
Homework	5	2	10
Project	1	35	30
Final examination	1	3	3
Total Work Load			149
Total Work Load / 25 (h)			5.96
ECTS Credit of the Course			6