



MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Fall

CSE2023 Discrete Computational Structures

COURSE DESCRIPTION FORM

Offering Department	Department of Computer Engineering		Undergraduate must course (3rd semester)						
Course Code	CSE2023								
Course Name	Discrete Computational Structures								
Language of Instruction	English								
ECTS	6								
Contact Hours	Theoretical (T):3	Practice (U):0	Laboratory (L):0						
Pre-requisites	-								
Instructor	Name	Ali Fuat ALKAYA							
	E-mail	falkaya@marmara.edu.tr							
Course Materials	Mandatory	Discrete Mathematics and Its Applications 7th edition, Kenneth H. Rosen, McGraw Hill							
	Recommended	http://mimoza.marmara.edu.tr/~falkaya/cse223							
Course Objectives	In this course, student will learn discrete computational structures which are very important for computer science. At the end of the course, the student will be able to prove the hypotheses by using the proof methods, know the concept of number theory and computing techniques, solve the recurrence relations, and define the problems of graph theory and trees.								
Course Content	The course starts with the logic and sets and continues with functions. Then proof methods are processed in detail by including induction. Recurrence relations, number theory, counting techniques, graph theory and problems emerging from these topics and the related algorithms will be covered.								
Learning Outcomes	LO1	Solve the logic problems within the rules of algebra.							
	LO2	Prove hypotheses using proof methods.							
	LO3	To be able to express the concepts of number theory and counting techniques.							
	LO4	Solve recurrence relations.							
	LO5	Define problems about graph theory and trees and apply related algorithms.							
	LO6	Express relations and properties.							
Program Outcomes		LO1	LO2	LO3	LO4	LO5	LO6		
PO1	Adequate knowledge in mathematics, science (a) and engineering subjects (b) pertaining to the relevant discipline (1); ability to use theoretical and applied information in these areas to model and solve engineering problems (2).	1a	1a	1a					
PO12	Knowledge of advanced mathematics subjects including differential equations, integral calculus (a), linear algebra (b), statistics and probability (c), and discrete mathematics (d).				d	d	d		
Subjects (Knowledge, Skills and Behaviours), Contributions of Subjects to Learning Outcomes, Assessment Methods	No	Week	Subjects	LO1	LO2	LO3	LO4	LO5	LO6
	S1	1-2	Logic and Sets	MF,H					
	S2	3	Functions	MF,H					
	S3	4-5	Methods of Proofs		MF,H				
	S4	6	Induction and Recursion		MF,H				
	S5	7	Recurrence Relations				MF,H		
	S6	8	Number Theory			MF,H			
	S7	9	Counting Techniques and Relations			MF,H			H
	S8	10-11	Graph Theory					MF,H	
	S9	12	Edge and Vertex Traversal Problems					MF,H	
	S10	13	Trees					MF,H	
S11	14	Optimization Problems					MF,H		
Assessment Methods and Weights	No	Type	Weight	Implementation Rule		Make-up Rule			
	MF	Midterm, Final	70%	There is one midterm and one final exam. Books and other course materials are closed during the exam. Course lecturer provides necessary logic rules and formulas.		Marmara University regulations will be followed for make-up exams.			
	H	Homeworks	30%	Late homeworks are not acceptable. Homeworks that are not submitted will get zero points. There are seven homeworks.					
	TOTAL		100%						

Determining Letter Grades

- The letter grades will be determined based on the midterm and final exams, and homeworks.
- In order to determine the letter grade, a curve or catalog based method will be followed based on the total average scores of the students.
- The final exam score and the total average score of the student must be at least 35 to pass the course.
- According to Marmara University Undergraduate regulations, the weight of the final exam must be at least 40 out of 100.

Assessment	Midterm	Quizzes	Final	TOTAL
Weight	30	30	40	100

Teaching Method, Student Work Load**Time Applied by Instructor**

No	Method	Explanation	Hours
1	Lectures	Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts.	14x3=42
2	Problem Session/ Practice	Problems related to the course topics are solved on the board.	
3	Laboratory	Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises.	
4	Interactive Courses	Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category)	
5	Field Work	Students attend activities outside the campus.	
6	Midterm	Midterm exam is given during the midterm week.	2
7	Final	Final exam is given during the final exam week.	2

Estimated Time to be Allocated by a Student

8	Project	The students carry out research about the problem given in the project, design and implement their solution and prepare a report.	
9	Homeworks	The students solve the problems given as homework.	10x7=70
10	Pre-class learning of Course Material	The students study and learn the new subjects from course materials.	
11	Review of Course Material	Students review the course subjects from course materials to prepare for the exams and homeworks.	21
12	Office Hour	Students ask questions to the instructor or the assistant during office hours.	2
Total			139

Academic Honesty

Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.