



MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Spring

CSE2138 Systems Programming

COURSE DESCRIPTION FORM

Offering Department		Department of Computer Engineering		Undergraduate must course (4th semester)				
Course Code		CSE2138						
Course Name		Systems Programming						
Language of Instruction		English						
ECTS		7						
Contact Hours		Theoretical (T):		Practice (U):		Laboratory(L):		
Pre-requisites		---						
Instructor		Name		Fatma CORUT ERGİN				
		E-mail		fatma.ergin@gmail.com				
Course Materials		Mandatory		Randal E. Bryant and David R. O'Hallaron, Computer Systems: A Programmer's Perspective, Third Edition , Pearson, 2016				
		Recommended						
Course Objectives		To gain knowledge about understanding the machine code generated by the C compiler on x-86-64 architecture. To gain the ability to write high performance C code.						
Course Content		To do arithmetic and logic operations with the integer and floating point data types in C programming language. The instructions in Intel x86-64 Instruction Set Architecture. The methods of writing high performance codes in C programming language. Memory hierarchy. Cache types and effect of cache to program performance. Methods of dynamic memory allocation.						
Learning Outcomes		LO1		To explain how Integer and Floating Point data types are stored in memory.				
		LO2		To understand and explain the x86-64 assembly language program generated by the C compiler.				
		LO3		To write high performance C code.				
		LO4		To explain different storage devices in the memory hierarchy and the design of these devices.				
		LO5		To understand and explain the dynamic memory management in C programming language.				
Program Outcomes				LO1	LO2	LO3	LO4	LO5
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).		1b	1b		1b	1b
PO13		Knowledge of mathematics, basic sciences (a), computer science (b) and engineering sciences (c) required for the design and analysis of complex electrical and electronic devices, software and systems including hardware and software.				b		
Subjects (Knowledge, Skills and Behaviours), Contributions of Subjects to Learning Outcomes, Assessment Methods	No	Week	Subjects	LO1	LO2	LO3	LO4	LO5
	S1	1,2	Integer Data Type and Integer Arithmetic	MF, P				
	S2	3	Floating Point Data Type	MF, P				
	S3	4-8	Machine-Level Programming		MF, P			
	S4	9	Optimizing Program Performance			MF		
	S5	10	The Memory Hierarchy				MF	
	S6	11,12	Cache Memories				MF, P	
S7	13,14	Dynamic Memory Allocation					MF	
Assessment Methods and Weights	No	Type	Weight	Implementation Rule			Make-up Rule	
	MF	Midterm, Final	60%	It is allowed to have an A4 size handwritten cheat sheet in the exams. Any kind of calculators or communication devices are not allowed.			Marmara University regulations will be followed for make-up exams.	
	p	Project	30%	A total of 3 individual projects is assigned. The deadline for the projects are 2 weeks after the assignment.			Projects can be submitted up to 3 days after the due date with a penalty of 10% for each late day. The grade for unsubmitted project is zero.	
	L	Laboratory study	10%	There is a laboratory session each week. The laboratory sessions are designed in a way that each student has a computer. The subjects discussed in the lecture hours are practiced on computer.			If the student is not able attend her/his own session, s/he can attend another session by talking to the TA.	
TOPLAM			100%					

Determining Letter Grades	<ul style="list-style-type: none"> The letter grades will be determined based on the midterm and final exams, project and laboratory. 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	Project	Laboratory	Final	TOTAL
	Weight	20	30	10	40	100
Teaching Method, Student Work Load	Time Applied by the 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.		14x2=28	
	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.		3x20=60	
	9	Homeworks	The students solve the problems given as homework.			
	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.		40		
12	Office Hour	Students ask questions to the instructor or the assistant during office hours.		2		
Total				176		
Academic Honesty	<p>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.</p> <p>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.</p>					