



MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Spring

CSE4034 Advanced Unix Programming

**COURSE DESCRIPTION FORM**

<b>Offering Department</b>	Department of Computer Engineering		Technical Elective					
<b>Course Code</b>	CSE4034							
<b>Course Name</b>	Advanced Unix Programming							
<b>Language of Instruction</b>	English							
<b>ECTS</b>	5							
<b>Contact Hours</b>	Theoretical (T): 3	Practice (P): 0	Laboratory(L): 0					
<b>Pre-requisites</b>								
<b>Instructor</b>	<b>Name</b>	Betül Boz						
	<b>E-mail</b>	betul.demiroz@marmara.edu.tr						
<b>Course Materials</b>	<b>Mandatory</b>	K. A. Robbins, S. Robbins, Unix Systems Programming						
	<b>Recommended</b>	W. Richard Stevens, Advanced Programming in the Unix Environment						
<b>Course Objectives</b>	The objective of this course is to introduce advanced Unix programming concepts and to discuss the differences between programs, processes and threads. This course covers the Unix process model including creation and deletion of threads/processes, and explains how to use and manage threads/processes for solving simple problems.							
<b>Course Content</b>	Processes, Threads, System calls, Unix standards, File I/O, Advanced file I/O, Terminal I/O, Inter process communication							
<b>Learning Outcomes</b>	<b>LO1</b>	Understand UNIX process model.						
	<b>LO2</b>	Understand thread structure and develop parallel applications using Pthreads.						
	<b>LO3</b>	Develop parallel applications using OpenMP.						
	<b>LO4</b>	Describe differences between processes and threads.						
	<b>LO5</b>	Learn inter-process communication techniques.						
<b>Program Outcomes</b>		<b>LO1</b>	<b>LO2</b>	<b>LO3</b>	<b>LO4</b>	<b>LO5</b>		
<b>PO1</b>	Adequate knowledge in mathematics, science (a) and computer 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, 2	1b, 2	1b	1b		
<b>PO2</b>	Ability to identify, formulate, and solve complex engineering problems (a); ability to select and apply proper analysis and modelling methods for this purpose (b).	a	a	a				
<b>Subjects (Knowledge, Skills and Behaviours), Contributions of Subjects to Learning Outcomes, Assessment Methods</b>	<b>No</b>	<b>Week</b>	<b>Subjects</b>	<b>LO1</b>	<b>LO2</b>	<b>LO3</b>	<b>LO4</b>	<b>LO5</b>
	S1	1	Introduction					
	S2	2	Programs and processes	MF, Q				
	S3	3	Threads		MF			
	S4	4-5	Posix Threads		MF			
	S5	6-7	Thread Synchronization		MF, P			
	S6	8	Critical sections and semaphores		MF, P			
	S7	9	OpenMP			MF, Q, P		
	S8	10	Processes and Threads	MF			MF	
	S9	11-12	Unix I/O					MF
	S10	13	IPC					MF, Q
S11	14	Unix special files					MF	
<b>Assessment Methods and Weights</b>	<b>No</b>	<b>Type</b>	<b>Weight</b>	<b>Implementation Rule</b>		<b>Make-up Rule</b>		
	MF	Midterm, Final	65%	There will be one midterm and one final exam. Exams are closed books and notes. Calculation and communication tools are not allowed during the exams.		Marmara University regulations will be followed for make-up exams.		
	Q	Quiz	10%	3 quizzes are applied.		-		
	P	Project	25%	There will be 2 programming and design projects. Students are asked to perform a demo for evaluation.				
	<b>TOTAL</b>		<b>100%</b>					

**Determining Letter Grades**

- The letter grades will be determined based on the midterm and final exams, quizzes 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	Quiz	Project	Final	TOTAL
Weight	25	10	25	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.	36
9	Homeworks	The students solve the problems given as homework.	6
10	Pre-class learning of Course Material	The students study and learn the new subjects from course materials.	13
11	Review of Course Material	Students review the course subjects from course materials to prepare for the exams and homeworks.	22
12	Office Hour	Students ask questions to the instructor or the assistant during office hours.	2
<b>TOTAL</b>			<b>125</b>

**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.