

# Operating Systems Practice

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Course Code:

CSE 336

Course Period:

Autumn

Course Type:

Area Elective

Credits:

3

Theoric:

3

Practice:

0

Laboratory Hour:

0

ECTS:

5

Prerequisite Courses:

Operating Systems Design [1]

Course Language:

English

Course Coordinator:

Şebnem Baydere [2]

Courses given by:

Şebnem Baydere [2]

Course Objectives:

The goal of the course is to advance the student's knowledge about operating systems(OS) kernel components and multi-threaded programming issues with extensive hands on experience.

Course Content:

Hands on experience on the implementation of fundamental OS kernel components. Operating System issues that are fundamental to the ability to effectively maintain and trouble-shoot problems arise in the course of multi-threaded application development.

Course Methodology:

1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study

Course Evaluation Methods:

A: Testing, B: Experiment, C: Homework, D: Project

Learning Outcomes	Program Outcomes	Teaching Methods	Assessment Methods
1. Knowledge of kernel components and their design principles	3,4	1,2	A, C, D
2. Knowledge and ability to use modern design techniques for the design of kernel system calls supporting multi-processing and multi-threading systems	3,4,5	1,2	A, C, D
3. Knowledge and ability to use modern operating system components and tools for the design of multi-threaded concurrent systems with realistic constraints in real life applications.	3,4,5	1,2	C, D
4. Ability to conduct experiments, gather data, analyze and interpret results for investigating engineering solutions to OS kernel design problems.	5	1,2	C, D

## COURSE CONTENT

Week	Topics	Study Materials
1	Introduction to OS concepts and historical perspective	
2	Processes and Threads	
3	Cooperating Processes	
4	Interprocess Communication Methods	

5	Synchronization Issues
6	Memory Management Issues
7	Midterm
8	Secondary Storage Management Issues
9	File System Design Issues
10	Hands-on Studies
11	Hands-on Studies
12	Hands-on Studies
13	Hands-on Studies
14	Hands-on Studies

## RECOMMENDED SOURCES

<b>Textbook</b>	A.Silberschatz et al, "Operating System Concepts", Addison Wesley
<b>Additional Resources</b>	A. Tanenbaum, "Modern Operating Systems", Prentice Hall G. Nutt, "Operating Systems, Addison Wesley

## MATERIAL SHARING

Documents

Assignments

Exams

## ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-terms	1	40
Quizzes	2	10
Assignment	4	20
Term Project	1	30
<b>Total</b>		<b>100</b>
<b>CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE</b>		<b>30</b>

CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		70				
Total		100				
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					X
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.		X			
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.		X			
9	Awareness of professional and ethical responsibility.			X		
10	Information about business life practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.	X				
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.		X			

## ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Including the exam week: Total course hours)	14	3	42
Hours for off-the-classroom study (Pre-study, practice)	14	2	28
Mid-terms	1	5	5
Homework	4	5	15
Term Project	1	30	25
Final examination	1	10	10
<b>Total Work Load</b>			125
<b>Total Work Load / 25 (h)</b>			5
<b>ECTS Credit of the Course</b>			5