

Operating Systems Practice

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

Textbook	A.Silberschatz et al, "Operating System Concepts", Addison Wesley
Additional Resources	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
Total		100
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		30

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
Total Work Load			125
Total Work Load / 25 (h)			5
ECTS Credit of the Course			5