East West University
Department of Computer Science and Engineering
Course Outline
Fall 2024 Semester

Course Information

Course: CSE325 Operating Systems (7 and 8)

Credit and Teaching Scheme:

	Theory	Laboratory	Total
Credits	3	1	4
Contact Hours	3 Hours/Week for 13 Weeks	2 Hours/Week for 13 Weeks	5 Hours/Week for 13 Weeks

Prerequisite: None

Instructor Information

Instructor: Prof. Dr. Md. Motaharul Islam
Professor, Department of Computer Science and Engineering
Office: Room # 446
E-mail: motahar.islam@ewubd.edu
URL: TBA
TA: TBA

Class Routine and Office Hour

Days	Class Hours	Course & sections	Room no.
Tuesday			
Thursday			

Course Objective

This course introduces the principles and techniques for the design and implementation of operating systems. This course also emphasizes the implementation of various techniques required for management, scheduling, allocation and communication of resources used in operating system. Knowledge of this course will be needed as prerequisite knowledge for future courses such as CSE360 Computer Architecture and CSE452 Distributed Systems and

Algorithms.

Course Outcomes (COs)

After completion of this course students will be able to:

CO1	**Interpret** and **use** different components of modern operating system for understanding their design goals.
CO2	**Interpret** and **use** different process management techniques for effective operating system design.
CO3	**Interpret** and **use** different memory and I/O management strategies for desirable resource utilization.
CO4	**Implement** different operating system techniques; **perform** and **demonstrate** these knowledge and **write** report for realistic system design.

Knowledge Profile

K3: Theory-based Engineering Fundamentals
K6: Engineering practice (technology)

Learning Domains

Cognitive - C3: Applying, C4: Analyzing
Psychomotor – P3: Precision, P4: Articulation
Affective - A2: Responding

Program Outcomes (POs)

PO1: Engineering Knowledge
PO2: Problem Analysis
PO5: Modern Tool Usage

Complex Engineering Problem Solution

EP1: Depth of knowledge required
EP2: Range of conflicting requirements

Complex Engineering Activities

None

Course Outcomes (COs) with Mappings

After completion of this course students will be able to:

CO	CO Description	PO	Learning Domains	Knowledge Profile	Complex Engineering Problem Solving/ Engineering

					Activities
CO1	**Use** the components of an operating system as a convenient interface of hardware to users.	PO1	C3	K3	EP1
CO2	**Apply** concepts and methods to manage the computing resources efficiently for resolving conflicting requirements.	PO1	C3	K3	EP1
CO3	**Choose** and **Justify** appropriate algorithms to resolve process synchronization, deadlocks, memory allocation.	PO2	C4	K3	EP1, EP2
CO4	**Demonstrate** skills and **write** reports to design and test a complex demand driven engineering problem.	PO5	P3, P4 C3, C4 A2	K6	EP1, EP2

Course Topics, Teaching-Learning Method, and Assessment Scheme

Course Topic	**Teaching-Learning Method**	**CO**	**Mark of Cognitive Learning Levels**		**CO Mark**	**Exam (Mark)**
			C3	C4		
Operating System Components	Lectures and discussions inside and outside the class with instructor/TA	CO1	5		5	**Midterm Exam I (20)**
Process	Do	CO1	5		5	

		CO2	5		5	
Thread	Do	CO1	5		5	
	Do	CO2	5		5	**Midterm Exam II**

Course Topic	**Teaching-Learning Method**	**CO**	**Mark of Cognitive Learning Levels**		**CO Mark**	**Exam (Mark)**
			C3	C4		
Scheduling Algorithms for Multi tasking		CO3		5	5	**(20)**
Inter Process Communication (IPC) and Synchronization	Do	CO2	5		5	
		CO3		5	5	
Deadlock Handling	Do	CO2	5		5	**Final (20)**
		CO3		5	5	
Memory Management	Do	CO3		10	10	
File, I/O and Disk Management	Do					

Laboratory Experiments and Assessment Scheme

Experiment	**Teaching Learning Method**	**CO**	**Mark of Cognitive Learning Levels**		**Mark of Psychomotor Learning Levels**	**Mark of Affective Learning Levels**	**CO Mark**
			C3	C4	P3	A2	

DOS &UNIX shell concepts such as command expansion and filters. DOS Command Prompt, Linux Shell, Process Commands	Discussion, Report Writing, Coding and Running Program	CO4					
Process Management Linux, GCC.	Do	CO4					
Thread Management Linux, GCC, POSIX	Do	CO4					

Process Scheduling Simulator. PS Simulator	Do	CO4					
Threads Synchronization (Mutex & Semaphore).	Do	CO4					
Memory Management	Do	CO4					
File Management Or Disk Scheduling	Do	CO4					
Lab Exercises (Total)			3	3	2	2	10
Lab Exam	Individual Lab Exam	CO4	3	1	1	0	5
Total			**6**	**4**	**3**	**2**	**15**

Mini Projects

Course Topic	Teaching Learning Method	CO	Mark of Cognitive Learning Level		Mark of Psychomotor Learning Level		Mark of Affective Learning Level	CO Mark
			C3	C4	P3	P4	A2	
Lab-based Mini Project including Report and Presentation	Group-based moderately complex digital circuit design project with report writing and oral/poster presentation	CO4	**3**	**2**	**2**	**2**	**1**	**10**

Overall Assessment Scheme

Assessment Area	CO				Other	PO Marks		
	CO1	CO2	CO3	CO4		PO1	PO2	PO5
Class Participation					5			
Class Test/Quiz					10			
Midterm-I Exam	15	5	0	0		20	0	0
Midterm-II Exam	0	10	10	0		10	10	0
Final Exam	0	5	15	0		5	15	0
Laboratory Performance and Lab Exam	0	0	0	15		0	0	15

Mini Project	0	0	0	10		0	0	10
Total	**15**	**20**	**25**	**25**	**15**	**35**	**25**	**25**

Teaching Materials/Equipment

Textbook:
A. Silberschatz, P.B. Galvin, G. Gagne. *Operating System Concepts*, 10th Ed. John Wiley & Sons, 2010. ISBN: 0-471-41743-2

Reference Book:
Andrew S. Tanenbaum, *Modern Operating System*, 3rd Edition, Prentice Hall. ISBN-13: 9780136006633.

Teaching Materials:
Lecture Notes, Textbook, Lab Exercises, Computer Software (GCC, YASS: A system simulator, POSIX), OS (LINUX).

Lab Manual:
Lab Manual will be provided in each lab.

Assignment:
Assignment description will be provided.

Project Description
Project description will be provided.

Course Web Link:
Google Class Room Link:

SECTION 7

https://classroom.google.com/u/2/c/NzI2NjA3NzA3NzYw

SECTION 8

https://classroom.google.com/u/2/c/NzE1MzQwNzQwODM4

Teaching-Learning Method:
- Lecture Notes*, Discussions, Lab Exercises*, Pre/Post-Lab Assignments and Project.
**Lecture (ppt) and Lab (sheets) materials will be delivered to students before each lab class.*

Grading System

Marks (%)	Letter Grade	Grade Point	Marks (%)	Letter Grade	Grade Point
97-100	A+	4.00	73-76	C+	2.30

90-96	A	4.00	70-72	C	2.00
87-89	A-	3.70	67-69	C-	1.70
83-86	B+	3.30	63-66	D+	1.30
80-82	B	3.00	60-62	D	1.00
77-79	B-	2.70	Below 60	F	0.00

Exam Dates

Section	Term I	Term II	Final
1	TBA	TBA	TBA
2	TBA	TBA	TBA

Academic Code of Conduct

Academic Integrity:
Any form of cheating, plagiarism, personification, falsification of a document as well as any other form of dishonest behavior related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties as decided by the Disciplinary Committee of the university.**

Special Instructions:

- Students are expected to attend all classes and examinations. A student MUST have at least 80% class attendance to sit for the final exam.
- Students will not be allowed to enter into the classroom after 20 minutes of the starting time.
- For plagiarism, the grade will automatically become zero for that exam/assignment.
- Normally there will be **NO make-up exam**. However, in case of **severe illness, death of any family member, any family emergency, or any humanitarian ground**, if a student misses any exam, the student MUST get approval of makeup exam by written application to the

Chairperson through the Course Instructor **within 48 hours** from the exam time. Proper supporting documents in favor of the reason of missing the exam have to be presented with the application.

· For **final exam**, there will be NO makeup exam. However, in case of **severe illness, death of any family member, any family emergency, or any humanitarian ground**, if a student misses the final exam, the student MUST get approval of **Incomplete Grade** by written application to the Chairperson through the Course Instructor **within 48 hours** of the final exam time. Proper supporting documents in favor of the reason of missing the final exam have to be presented with the application. **It is the responsibility of the student to arrange an Incomplete Exam within the deadline mentioned in the Academic Calendar in consultation with the Course Instructor**.

· All mobile phones MUST be turned to silent mode during class and exam period. · There is **zero tolerance for cheating** in exam. Students caught with cheat sheets in their possession, whether used or not; writing on the palm of hand, back of calculators, chairs or nearby walls; copying from cheat sheets or other cheat sources; copying from other examinee, etc. would be treated as cheating in the exam hall. The only penalty for cheating is **expulsion for several semesters as decided by the Disciplinary Committee of the university**.