Department: Computer Science

College: College of Science

University of Cihan-Sulaymaniyah Campus

Subject: operating system I

Year: Four, semester: One

Lecturer's name: Mr. Sadeer Dheyaa (BSc, MSc)

Academic Year: 2023/2024

Course Book

1. Course name	operating system I
2. Lecturer in charge	Mr. Sadeer Dheyaa AbdulAmeer
3. Department/ College	Computer science department /college of science
4. Time (in hours) per week	Theory: 2 hrs. Practical: 2 hrs.
5. Office hours	Full time
6. Course code	CSC4107
7.Teachers academic profile	Certificates : B.Sc. computer science –AL Mansour university college 2010 Baghdad –Iraq M.Sc. computer science – Oxford college-Bangalore – India. Experience : In 2013 AL Nakhba college handled logic design for second semester. In 2014-2015 Cihan university /Sulaymaniyah handled object oriented programming in Java, computer skills, computer application, operating system I. In 2014-2015 admin of Cihan website. In 2015-2016 currently handle object oriented programming in C# and operating system I,II and computer skills Currently handling object oriented programming, operating system, Compiler. Teacher profile link: __Cihan-slemani (sulicihan.edu.krd)__
8. Keywords	operating system I

9. Course overview:

The course will enhance students' knowledge on fundamental of Operating System concepts such as threading, Process concept and its states, scheduling concepts and its algorithms, Parallel and Concurrent processing   , memory managements, Deadlock, Real Storage.

10. Course objective:

To have broad knowledge of principles of operating systems, software and hardware. These together with processes concepts, real storage virtual storage, deadlock, processor scheduling and parallel processing and other related topics guides students to have detailed concepts of operating system function.

11. Student's obligation:

Student should be able to contribute significantly to finish his assignments alone and within a group work. Attending lectures will be compulsory to pass this subject.

12. Forms of teaching:

Contact hours: 2 theoretical weekly hours + 2 Lab.

13. Assessment scheme:

Midterm test As (25%)

Midterm Laboratory exam As (15%)

Quizzes and assignments As (10%)

Final Exam theory exam As (35%)

Final laboratory exam As (15 %)

14. Student learning outcome:

To have broad knowledge of principles of operating systems, software and hardware. These together with processes concepts, real storage virtual storage, deadlock, processor scheduling and parallel processing and other related topics guides students to have detailed concepts of operating system function.

15. Course Reading List and References:
   1. *Operating System Concepts by Abraham Silberschatz, 2010, 8th edition.*
   2. *Operating System Concepts by Abraham Silberschatz, 2005, 7th edition.*
   3. *Operating System by Harvey M.Deitel-2004, 3rd edition.*

16. The Topics with lab		Lecturer's name: sadeer Dheyaa Abdulameer
Week 1	*Theory:* *Introduction, What is OS, History of OS, OS component, computer system types.*	
	Practical: *Introduction to java language and its importance in programming.*	
Week 2	*Theory:* *Trap, interrupt handling, I/O structure, DMA, Caching, threading.*	
	Practical: *The student will write program for interrupt handling and how we generate it.* *Explain to student some basic program to practice on using the text pad.*	
Week 3	*Theory:* *Dual Mod operation, Memory protection, hardware address protection.*	
	Practical: *Student will prepare about the dual mode and how we can protect the memory using base and limit registers.*	

Week 4	*Theory:* *Process activity of process management, Memory, activity of memory management, file system, activity of file management.*
	Practical: *The student will write programs how to deal with files and how to create them, how to read the files and how to delete them.*
Week 5	*Theory:* *Secondary storage management, Distributed system, protection system.*
	Practical: *The student will write programs for distributed system like implementing RMI.*
Week 6	*Theory:* *Services of OS, system calls, communication model, layered approach, Microkernel, System Policy.*
	Practical: *Students will write program to generate signals in the system and how we can deal with system call service.*
Week 7	*Theory:* *Mid-term examination.*
	Practical: *Mid-term examination.*

Week 8	*Theory:* *Mid-term examination.*
	Practical: *Mid-term examination.*
Week 9	*Theory:* *Process concept, process state, PCB, process scheduling queue, Scheduler.*
	Practical:
Week 10	*Theory:* *Context switch, Process creation, Process termination, Cooperating process, Procedure –consumer problem.*
	Practical: *Student will write program about producer-consumer problem.* *Student will write programs about process creation, termination and how to generate process id and how check if its diamond process or not.*
Week 11	*Theory:* *IPC, Socket, RMI, Synchronization and Buffering.*

	Practical:
	
	Student will write programs for
	    - *IPC*
	    - *Socket*
	    - *RMI and synchronization*

Week 12	*Theory:* *Process Scheduling algorithms with examples* *FCFS,SJF(pre-emptive and non-pre-emptive)*
	Practical: *Student will write programs for following algorithms:* - *FCFS* - *SJF in both pre-emptive and non-pre-emptive.*
Week 13	*Theory:* *Process Scheduling algorithms with examples* *Priority, Round Robin, Multi-level queue.*
	Practical: *Student will write programs for following algorithms:* - *Round Robin* - *Priority scheduling* - *Multi-level queue*
Week 14	*Theory:* *Memory management such as first fit-best fit, worst fit algorithms.*
	Practical: *Student will write programs for following algorithms:* - *First fit algorithm* - *Best fit algorithm* - *Worst fit algorithm*
Week 15	*Theory:* *Deadlock concept and it techniques.*
	Practical: *Students will write program how to avoid deadlock*

17. Peer review

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

Dr. Lway Faisal Abdulrazak   *Mr. Sadeer Dheyaa AbdulAmeer*

Head of Computer Science Department   *Main Lecturer in charged*