Academic Program Specification Form For The Academic

Universitiy: of Baghdad
College : Al_Khwarizmi College of Engineering
Number Of Departments In The College :
Date Of Form Completion :

Dean's Name

Date :   /   /

Signature

Dean's Assistant For Scientific Affairs

Date :   /   /
Signature

The College Quality Assurance And University Performance Manager
Date :   /   /
Signature

Quality Assurance And University Performance Manager
Date :   /   /
Signature

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Programme Title	**Operating Systems**
4. Title of Final Award	BSc degree in Information and Communication Engineering
5. Modes of Attendance offered	Attendance is mandatory according to the university rules in 2023-2024
6. Accreditation	Abet
7. Other external influences	
8. Date of production/revision of this specification	2023
9. Aims of the Programme	
This programme provides a comprehensive introduction to understand the underlying principles, techniques and approaches which constitute a coherent body of knowledge in operating systems. In particular, the course will consider inherent functionality and processing of program execution. The emphasis of the course will be placed on understanding how the various elements that underlie operating system interact and provides services for execution of application software.	

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Cognitive goals

- A1. gain extensive knowledge on principles and modules of operating systems
- A2 - understand key mechanisms in the design of operating systems modules
- A3 - understand process management, concurrent processes and threads, memory management, virtual memory concepts, deadlocks
- A4 - compare the performance of processor scheduling algorithms
- A5 - produce algorithmic solutions to process synchronization problems
- A6- use modern operating system calls such as Linux process and synchronization libraries

A7- practice with operating system concepts such as process management, synchronization, networked processes, and file systems

B. Subject-specific skills

B1- Master functions, structures, and history of operating systems
B2- Be familiar with multithreading
B3- Master concepts of memory management including virtual memory
B4- Be familiar with protection and security mechanisms
B5- Be familiar with various types of operating systems including Linux

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment methods

homework 10%

quizzes - 10%

 midterm -20%

laboratory-10%

 final - 50%

C. Affective and value goals

C1. Master understanding of design issues associated with operating systems

C2- Master various process management concepts including scheduling, synchronization, deadlocks

C3- Master system resources sharing among the users
C4- Master issues related to file system interface and implementation, disk management.
Teaching and Learning Methods
Lectures, Presentations, Recitation and Documentations
Assessment methods
Assessment methods
homework 10% quizzes - 10%   midterm -20% laboratory-10%   final - 50%

D. General and Transferable Skills (other skills relevant to employability and personal development)   D1. Ability to design and conduct experiments.   D2. Ability to design a system, component or process to meet desired needs
Teaching and Learning Methods
Lectures, Presentations, Recitation and Documentations
Assessment methods
homework 10% quizzes - 10%   midterm -20% laboratory-10% final - 50%

11. Programme Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	

4th class		Operating Systems	4	Bachelor Degree
				Requires (x) credits

13. Personal Development Planning

1. Manage tasks, and solve problems.

2. Negotiate learning contracts.

3. Think logically and critically.

4. Use a range of technological equipment and systems.

14. Admission criteria.

According to the rules of Ministry of Higher Education and Scientific Research in Iraq.

15. Key sources of information about the programme

1. Books
2. Trusted Internet sources related to the Program
3. Papers.

Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Ski		
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3

Curriculum Skills Map

please tick in the relevant boxes where individual Programme Learning Outcomes ar

Programme Learning Outco

TEMPLATE FOR COURSE SPECIFICATION

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and   demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Course title/code	Operating Systems
4. Modes of Attendance offered	attendance is mandatory according to the university rules in 2023-2024
5. Semester/Year	1st semester/ 4th year
6. Number of hours tuition (total)	75
7. Date of production/revision of this specification	2023
8. Aims of the Course	
This course provides a comprehensive introduction to understand the underlying principles, techniques and approaches which constitute a coherent body of knowledge in operating systems. In particular, the course will consider inherent functionality and processing of program execution. The emphasis of the course will be placed on understanding how the various elements that underlie operating system interact and provides services for execution of application software.	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- A1 -gain extensive knowledge on principles and modules of operating systems
- A2 - understand key mechanisms in the design of operating systems modules
- A3 - understand process management, concurrent processes and threads, memory management, virtual memory concepts, deadlocks
- A4 - compare the performance of processor scheduling algorithms
- A5 - produce algorithmic solutions to process synchronization problems
- A6- use modern operating system calls such as Linux process and synchronization libraries
- A7- practice with operating system concepts such as process management, synchronization, networked processes, and file systems

B. Subject-specific skills

B1- Master functions, structures, and history of operating systems

B2- Be familiar with multithreading

B3- Master concepts of memory management including virtual memory

B4- Be familiar with protection and security mechanisms

B5- Be familiar with various types of operating systems including Linux

Teaching and Learning Methods

Lectures, Presentations, Recitation and Documentations

Assessment methods

homework 10%

quizzes - 10%

midterm -20%

laboratory-10%

final - 50%

C. Thinking Skills

C1- Master understanding of design issues associated with operating systems

C2- Master various process management concepts including scheduling, synchronization, deadlocks

C3- Master system resources sharing among the users

C4- Master issues related to file system interface and implementation, disk management

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Ability to design and conduct experiments.

D2. Ability to design a system, component or process to meet desired needs

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	5		Introduction What Operating Systems Do Computer-System Organization Computer-System Architecture Operating-System Structure Operating-System Operations System Boot	Classroom with whiteboard	Quizzes
2	5		System Structures Operating-System Services User Operating-System Interface System Calls	Classroom with whiteboard	Quizzes
3	5		Virtual Machines	Classroom with whiteboard	Quizzes
4	5		Process Concept Process Scheduling Operations on Processes	Classroom with whiteboard	Quizzes

5	5		Interprocess Communication Multithreaded Programming Multithreading Models	Classroom with whiteboard	Quizzes
6	5		Process Scheduling Basic Concepts Scheduling Criteria	Classroom with whiteboard	Quizzes
7	5		CPU Scheduling Algorithms	Classroom with whiteboard	Quizzes
8	5		CPU Scheduling Algorithms	Classroom with whiteboard	Quizzes
9	5		Synchronization The Critical-Section Problem	Classroom with whiteboard	Quizzes
10	5		Peterson's Solution Synchronization Hardware Semaphores Classic Problems of Synchronization Monitor	Classroom with whiteboard	Quizzes
11	5		Deadlocks System Model Deadlock Characterization Methods for Handling Deadlocks Deadlock Prevention Deadlock Avoidance Deadlock Detection Recovery from Deadlock	Classroom with whiteboard	Quizzes
12	5		Memory-Management Strategies Background Swapping Contiguous Memory Allocation Paging Structure of the Page Table Segmentation	Classroom with whiteboard	Quizzes
13	5		Virtual Memory	Classroom with whiteboard	Quizzes

			Page replacement algorithms		
14	5		File System File Concept Access Methods	Classroom with whiteboard	Quizzes
15	5		Mass Storage Structure Disk Structure Disk Scheduling Disk Management	Classroom with whiteboard	Quizzes

11. Infrastructure	
1. Books Required reading:	Text book 1: Silberschatz, Galvin and Gagne, Operating System Concepts, 8th Edition 2009. Text book 2: Silberschatz, Galvin and Gagne, Operating System Concepts, 10th Edition 2018. Text book 3: Stallings, Operating Systems. Internals and Design Principles, 5th Edition, Prentice-Hall, 2005.
2. Main references (sources)	Silberschatz, Galvin and Gagne, Operating System Concepts, 9th Edition 2013.
A- Recommended books and references (scientific journals, reports…).	
B-Electronic references, Internet sites…	

12. The development of the curriculum plan