



Course Specification

(Bachelor)

Course Title: Operating System

Course Code: 167CIS-3

Program Technical support

Department: COMPUTER Deptment

College: Applied college

Institution: Najran University 19 AUG 2023

Version: 1

Last Revision Date 2024/10/1:

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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (Third level)

4. Course General Description:

This course provides the student with an introduction to the operating system, system structures, operating system services, types of operating systems, and Linux commands. In addition, it explains the following concepts: Process scheduling, processor scheduling, threading, deadlocking, and memory management: fragmentation, virtual memory, and file system.

5. Pre-requirements for this course (if any):

no

6. Co-requisites for this course (if any):

No

7. Course Main Objective(s):

- ✓ Identify the services provided by the operating system.
- ✓ Illustrate the structural design of an operating system.
- ✓ Identifies and describes the major and common components of an operating system.
- ✓ To understand the structure and organization of the Process, Memory, and File system.
- ✓ Acquire basic knowledge of Distributed Operating System , Windows, dos and Linux operating system.

2. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|----|--|---------------|------------|
| 1 | Traditional classroom | 4 | %95 |
| 2 | E-learning | | |
| 3 | Hybrid <ul style="list-style-type: none"> Traditional classroom | | %5 |





| No | Mode of Instruction | Contact Hours | Percentage |
|----|---------------------|---------------|------------|
| | • E-learning | | |
| 4 | Distance learning | | %0 |

3. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|-------|-------------------|---------------|
| 1. | Lectures | 30 |
| 2. | Laboratory/Studio | 30 |
| 3. | Field | |
| 4. | Tutorial | |
| 5. | Others (specify) | |
| Total | | 60 |

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|------|---|---------------------------------------|--|------------------------|
| 1.0 | Knowledge and understanding | | | |
| 1.1 | Outline of secondary storage and Virtual memory concepts | K3=P | Lecture Individual and group discussions | -Exams -Assignments |
| 1.2 | understand the structure and organization of the Process | | | |
| ... | | | | |
| 2.0 | Skills | | | |
| 2.1 | Differentiate between different operating systems. | S3=I | Lecture Small Group Work Lab Demonstration | Exam Lab Reports |
| 2.2 | Implementation of various algorithms in CPU and hard disk scheduling to solve problems. | | | |
| ... | | | | |
| 3.0 | Values, autonomy, and responsibility | | | |





| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|------|---|---------------------------------------|---------------------|--------------------|
| 3.1 | Respects others in various work environments and takes responsibility for decision-making | V1 | | |
| 3.2 | | | | |
| ... | | | | |

C. Course Content

| No | List of Topics | Contact Hours |
|-------|---|---------------|
| 1. | Introduction to Operating System , System Structures Lab: Operating systems available and introduction to MS-DOS | 2 2 |
| 2. | operating system services , types of operating systems Lab: Exercised on MS-DOS Environmen: check for a single file- check for group of files-list files with the same extensions -changing directories | 4 2 |
| 3. 3 | Process management: Process Scheduling – Processor Scheduler-Threading, Deadlocks – Inter-Process Communication – Race Condition Lab: Exercised on MS -DOS Environment: create, copy, rename directory, create copy rename file, display a file contents, Working on subdirectories. | 4 4 |
| 4. 4 | Memory Management: Paging -segmentation-virtual memory Lab: Scheduling Programs , Linux commands | 4 4 |
| 5. 5 | File System: File Concept: File Attributes, File Operations, File Types, Access Methods: Sequential Access, Direct Access, Directory and Disk Structure: Single-level Directory, Two-Level Directory, Tree-Structured Directories, Protection: Types of Access, Access Control. Lab: Linux commands | 4 4 |
| 6. 6 | Secondary Storage Structure: Magnetic Disks, Magnetic Tapes, Network-Attached Storage, Storage-Area Network. Lab: Lab: Linux commands | 4 2 |
| 7. 7 | I/O Systems: Introduction, I/O Hardware, Pooling , DMA. Lab: Services in windows, Device Manager, , Task Manager. | 4 2 |
| 8. 8 | Distributed Systems: Introduction, Types of Networks based Operating System: Network Operating System, Distributed Operating System. Lab: Data Backup: System State Data, User Data. Add new Hardware in the Windows 10, Install device driver Software, Installation of Application Software, Install windows component | 4 4 |
| 9. 9 | System Security: Security Problem, Program Threats, User Authentication. Lab: Device protection in Windows, Windows Security: Firewall, Antivirus | 4 2 |
| 10. | | |
| --- | | |
| Total | | 60 |





D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|----|---|--------------------------------|--------------------------------------|
| 1. | Midterm Exam | 8 | 20% |
| 2. | Course Project, Assignments, Quizzes, . . . | During Semester | 10% |
| 3. | Practical Exam | 16 | 20% |
| 4 | Final Exam | 17 | 50% |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

| | |
|--------------------------|---|
| Essential References | Abraham Silberschatz, Peter B. Galvin , Greg Gagne, Operating System Concepts 9th Edition, John Wiley & Sons, December 7, 2012, ISBN-10: 978-1-118-06333-0. |
| Supportive References | "Modern Operating Systems", Andrew S. Tanenbaum., Third Edition , Prentice Hall. |
| Electronic Materials | |
| Other Learning Materials | |

2. Required Facilities and equipment

| Items | Resources |
|---|---|
| facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | A classroom equipped with a projector , (image and sound) and a smart board |
| Technology equipment (projector, smart board, software) | Business automation lab equipped with computers and connected to the Internet |
| Other equipment (depending on the nature of the specialty) | |



F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|--|
| Effectiveness of teaching | students | Questionnaire |
| Effectiveness of Students assessment | Faculty members / quality committee / peer reviewer | Direct observation |
| Quality of learning resources | Faculty members and leaders/students | typical tests and answers / assessments and assignments / questionnaires |
| The extent to which CLOs have been achieved | Planning and curricula committee /faculty members | Measuring learning outcomes |
| Other | students | Questionnaire |

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

| | |
|---------------------------|--|
| COUNCIL /COMMITTEE | |
| REFERENCE NO. | |
| DATE | |

