Operating Systems

Programme(s) on which the course is given: B.Sc degree in Information System
Major or minor element of programmes: Major
Department offering the programme: Information System department
Department offering the course: Computer Science department
Academic year / Level: Third year – Second term
Date of specification approval:

A- Basic Information

Title: Operating Systems **Code:** CSC 355
Credit Hours: -----
Lecture: 3 hrs / week
Tutorial: 0 hrs / week
Practical: 2 hrs / week
Total: 5 hrs / week

B- Professional Information

1. Overall Aims of Course.

Get a good understanding of "how stuff works", i.e., how computers operate, how programs get executed, how hardware resources are managed, etc..

2. Intended Learning Outcomes of Course (ILOs)

a) Knowledge and Understanding:

The course aims to give the student:
a1- Understand the function, the structure, and operation of modern operating systems.
a2- Understand the interaction between (system) software and hardware, as well as between the operating system and applications.
a3- Understand how processes are scheduled, managed, etc.
a4- Understand how computer's memory is managed.

b) Intellectual Skills:

At the end of the course, the student will know:
b1- Compare between different operating systems.
b2- Classify a specific operating system.
b3- Recognize the importance of the operating systems.
b4- Recognize the different components of an operating system.

c) Professional and Practical Skills:

At the end of the course, the student will be able to:

c1- Identify a suitable process scheduling algorithm.

c2- Write a suitable algorithm to manage the computer memory.

c3- Ability to solve problems associated with process scheduling and memory management.

d) General and Transferable Skills:

At the end of the course, the student will have:

d1- Communication skills, both written and oral.

d2- Visual presentation skills.

d3- Search the Internet for the new approaches related to operating systems.

d4- Write articles identifying the new operating systems strategies.

3. Content of Course

Topic	No. of Hrs	Lecture	Tutorial/ Practical
What is an operating system? - key concepts - Hardware - Software	10	6	4
Single-task OS - Memory map and registers - Stack - Input / output	10	6	4
Multi-tasking and multi-user OS - Competition and resources - Memory map - Kernel and shells – layers of software - Services – daemons - Multiprocessor – parallelism	10	6	4
Processes and threads - key concepts - Creation and scheduling - Threads - Synchronization of processes and threads - Deadlocks	10	6	4
Memory and storage - Logical and physical memory - Virtual memory - Disks: secondary storage - Disk file systems	10	6	4
Networks: services and protocols - Services: the client server model - Communication and protocol - Services and ports	10	6	4

- UNIX client- server implementation - The telnet command			

4. Teaching and Learning Methods

- Lectures
- Tutorials
- Computer-lab Sessions
- Practical lab work
- Class discussions
- Internet searches
- Independent Work
- Group projects
- Problem-based Learning

5. Student Assessment

a) Assessment Methods

- Assignments and Quizzes
- Midterm written exam
- Oral exam
- Practical exam
- Final written exam

b) Assessment schedule

Midterm examination	Week 7
Practical examination	Week 13
Oral examination	Week 14
Final examination	Week 15

c) Weighting of assessments

Assignments and Quizzes	0 %
Mid-Term Examination	10%
Oral Examination	10%
Practical Examination	15%
Final-term Examination	65%
Total	**100 %**

6. List of References

a) Recommended Books:

- G. Nutt: Operating Systems (a modern perspective) (3rd ed.), Addison Wesley, 2002
- W. Stallings: Operating Systems (5th ed.), Prentice-Hall, 2005.

7. Facilities Required for Teaching and Learning

- Computer lab.

- Data show device.

Course coordinator:

Head of Department:

Date: / /