

OPERATING SYSTEM -1 CS 241

I – Basic Course Information

Programme(s) on which the course is given: Common to All Programmes
Major or minor element of programmes: General
Department(s) offering the programme(s): All Departments
Department offering the course: Computer Science Department

Academic level: 200 Level
Semester in which course is offered: Second (Spring) Semester
Course pre-requisite(s): CS 215

Credit Hours: 3
Contact Hours Through:

- Lecture: 3.0
- Tutorial: 0.0
- Practical: 1.5
- Total: 4.5

Authorization date of course specification:

II – Professional Information

1. Overall Aims of Course

This course involves study of concepts and components of general purpose operating systems. It provides the frame of reference of how an operating system works involves an understanding of hardware structures (devices, networks, memory organisation) and software structures (scheduling, concurrency). LINUX is a general purpose operating system used as examples when studying these concepts. Laboratory assignments of process/thread synchronization, process communication, and memory management are given.

2. Intended Learning Outcomes of Course (ILOs)

a. Knowledge and Understanding

On successful completion of this course the student should be able to:

- a1- Describe the structure of an operating system and know the major the parts of an OS.
- a2- Describe most important hardware structures upon which an OS is based.
- a3- Differentiate between processes and threads.
- a4- Explain the operation of a memory management unit for paging.
- a5- Demonstrate various scheduling algorithms and OS schedules tasks.

b. Intellectual/Cognitive Skills

On successful completion of this course the student should be able to:

- b1- Specify and design computer based systems.
- b2- Develop scheduling algorithms and OS schedules tasks.

b3- Design multithreaded & concurrent programs.

c. Subject-Specific Practical Skills

On successful completion of this course the student should be able to:

- c1- Write programs that create processes and threads.
- c2- Write multithreaded programs.
- c3- Use basic Linux commands and utilities.
- c4- Program in Linux environment.

d. General and Transferable Skills

On successful completion of this course the student should be able to:

- d1- Work as a part of a team to produce reports.
- d2- Work as a part of a team to find a solution for practical problems and projects.
- d3- Write structural reports.
- d4- Make oral communication skills by making report presentation.

3. Course Contents

	Topic	No. of hours
1-	Introduction & Hardware Structures	3
2-	Operating System Structures	3
3-	Processes	3
4-	Threads	3
5-	CPU Scheduling	6
6-	Synchronization	9
7-	Memory Management	6
8-	Virtual Memory	6

4. Teaching and Learning Methods

Select method by checking in the box in front of the method, and type the ILOs' codes in the field opposite the method.

Teaching/Learning Method	To teach/learn the following ILO's
<input checked="" type="checkbox"/> Lectures & Seminars	a1,a2,a3,a4,a5
<input type="checkbox"/> Tutorials	
<input checked="" type="checkbox"/> Computer-lab Sessions	b1,b2,b3,b4
<input checked="" type="checkbox"/> Practical lab work	c1,c2,c3
<input type="checkbox"/> Reading Materials	
<input type="checkbox"/> Web-site Searches	
<input checked="" type="checkbox"/> Independent Work	c1,c2,c3
<input checked="" type="checkbox"/> Group Work	d1,d2
<input type="checkbox"/> Case Studies	
<input type="checkbox"/> Presentations	d4,d3
<input checked="" type="checkbox"/> Simulation Analysis	b1,b2,b3,b4
<input type="checkbox"/> Problem-based Learning	
<input type="checkbox"/> Others (Specify):	

5. Assessment Methods

Select method by checking in the box in front of the method, and type the ILOs' codes in the field opposite the method.

Assessment Method	To assess the following ILO's	Assessment Weight
<input checked="" type="checkbox"/> Unseen Exams	a1,a2,a3,a4,a5	60%
<input type="checkbox"/> Open book Exam		
<input type="checkbox"/> Take home Exam		
<input type="checkbox"/> Quizzes	a1,a2,a3,a4,a5	15%
<input checked="" type="checkbox"/> Course Work		
<input checked="" type="checkbox"/> Report Writing	d3	2.5%
<input type="checkbox"/> Case Study Analysis		
<input checked="" type="checkbox"/> Oral Presentations	d4	2.5%
<input type="checkbox"/> Practical		
<input checked="" type="checkbox"/> Group Project	d1,d2,c1,c2,c3,b1,b2,b3,b4	10%
<input checked="" type="checkbox"/> Individual Project	c1,c2,c3,b1,b2,b3,b4	10%
<input type="checkbox"/> Others (Specify):		

6. List of References

6.1- Essential books (text books)

A. Silberschatz et. al.: Operating System Concepts (7th ed.), Addison Wesley, 2004.

6.2- Course notes:

None

6.3- Recommended books

1. Operating Systems: Internals and Design Principles, Fifth Edition, by William Stallings, Publisher: Prentice Hall, 2005

2. Modern Operating Systems, second Edition, by Andrew S. Tanenbaum
Publisher: Amazon: 2002

6.4- Periodicals, Web sites, etc ...

1. <http://www.knoppix.net/>

2. <http://lowfatlinux.com/>

3. <http://www.linux.org/lessons/beginner/toc.html>

4. <http://www.ee.surrey.ac.uk/Teaching/Unix/>

5. <http://www.fsid.cvut.cz/cz/U201/LINUX.HTML>

7- Facilities required for teaching and learning

1. Computer labs.

Course coordinator: **Dr. Abeer El Korany**

Head of Department: **Prof. Dr. Fatma Omara**

Date: **19/6/2007**