University: *Fayoum University*
Faculty: *Computers and Information*
Department: *Computer Science*

Course Specification 2015-2016

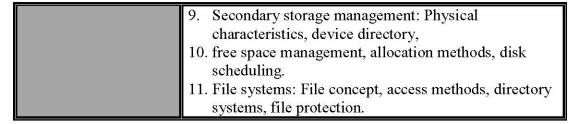| 1- Basic Information		
Code: CSC 355	**Course Title:** Operating Systems	**Year/Level:** Third year – Second term
Programme: B.Sc. degree in Computer Science	**Number of units:** **Lecture:** **Tutorial:** **Practical:**	3 hrs/ week 0 hrs/ week 2 hrs/ week

2- Aims of Course:	This course aims to give the student a strong knowledge of how computers operate, how programs get executed and how hardware resources are managed via understanding concepts related to Operating Systems such as CPU scheduling, secondary storage, memory management and multiprogramming

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	**A4.** Explain essential concepts, principles, and theories related to computer science such as operating system. a1) Understand the function, structure, and operation of modern operating systems. a2) Understand the interaction between software and hardware, as well as between the operating system and applications. **A11.** Describe main concepts of operating systems, information systems and databases. a3) Understand how processes are scheduled, managed, etc… a4) Understand how computer's memory is managed.
B- Intellectual Skills:	**B8.** Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution. b1)Understand the different components of the operating system and how they work together b2) Understand the different processes and algorithms used through the operating system **B9.** Compare between the classifications of (data, results, methods, techniques, algorithms... etc.). b3) Compare between different operating systems. b4) Classify a specific operating system.

	b5) Recognize the importance of the operating systems. b6) Recognize the different components of an operating system.
C- Professional and Practical Skills:	**C10.** Evaluate computer-based systems from various perspectives. c1) Compare between different operating systems c2) Measure the availability interoperability and other criteria for the operating system **C11.** Develop a range of fundamental research skills that enable the graduate to continuously increase his knowledge, advance his career and pursue graduate studies. c3) Identify a suitable process scheduling algorithm. c4) Write a suitable algorithm to manage the computer memory. c5) Ability to solve problems associated with process scheduling and memory management.
D- General and transferable Skills	**D3.** Work as a member of a development team, recognizing the different roles within a team and different ways of organizing teams. d1) Communication skills, both written and oral. d2) Visual presentation skills. d3) Search the Internet for new approaches related to operating systems. d4) Write articles identifying the new operating systems strategies. **D6.** Demonstrate skills in team work, team management, time management and organizational skills. d5) Apply the principles of team work and time management through the tasks given. d6) Improve students skills through searching, doing presentation and discussion.

4-Course Content:	1. Introduction, Operating system structures: System components, operating system services, 2. system structure, virtual machines, 3. System design and implementation, system generation. 4. Concurrent processes: Process concept, the producer/ consumer problem, the critical section problem, 5. Semaphores, language constructs, interposes communication. 6. CPU scheduling: Scheduling concepts, performance criteria, scheduling algorithm. 7. Memory management: Multi programming with fixed partitions, 8. Multiprogramming with variable partitions, paging, segmentation.

	9. Secondary storage management: Physical characteristics, device directory,
	10. free space management, allocation methods, disk scheduling.
	11. File systems: File concept, access methods, directory systems, file protection.

5- Teaching and Learning Methods:	1. Lectures
	2. Tutorials
	3. Computer-lab Sessions
	4. Practical lab work
	5. Class discussions
	6. Internet searches
	7. Independent Work
	8. Group projects
	9. Problem-based Learning

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	1. Assignments and Quizzes
	2. Midterm written exam
	3. Oral exam
	4. Practical exam
	5. 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%

8- Books and References	
A- Notes:	-
B- Essential Books (Text Books):	▪ Silberschatz, Galvin and Gagne, "Operating System Concepts", John Wiley. 9th ed (2014)
C- Recommended Books:	- G. Nutt: Operating Systems (a modern perspective), Addison Wesley. (2005) - W. Stallings: Operating Systems, Prentice-Hall. (2015)
D- Periodicals, Web sites, … etc	-

Course Professor: Dr. Haytham Al-feel   Department Head: Dr.Amira Edress

Course Content Intended Learning Outcomes Matrix

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Course Content	Week	Knowledge & Understanding				Intellectual Skills						Professional & Practical Skills					General & Transferable Skills					
		a1	a2	a3	a4	b1	b2	b3	b4	b5	b6	c1	c2	c3	c4	c5	d1	d2	d3	d4	d5	d6
1. Introduction, Operating system structures: System components, operating system services,	1	x	x			x				x	x	x										
2. system structure, virtual machines,	2	x	x				x					x	x				x		x	x		x
3. System design and implementation, system generation.	3	x		x	x		x						x	x	x	x			x	x		x
4. Concurrent processes: Process concept, the producer/ consumer problem, the critical section problem,	4	x		x			x						x	x	x			x		x	x	
5. Semaphores, language constructs, interposes communication.	5	x		x	x	x							x	x	x		x		x	x		x
6. CPU scheduling: Scheduling concepts, performance criteria, scheduling algorithm.	6			x	x	x	x			x				x	x			x	X		x	
7. Memory management: Multi programming with fixed partitions,	7			x	x		x						x			x			X			
8. Mid Term Exam	**8**																	x		X		
9. Multiprogramming with variable partitions, paging, segmentation.	9	x					x							x	x				x	X		X
10. Secondary storage management: Physical characteristics, device directory,	10		x			x							x		x				X			
11. Free space management, allocation methods, disk scheduling.	11			x	x	x							x	x	x				X	x		X
12. File systems: File concept, access methods, directory systems, file protection.	12	x				x								x	x	x	X				x	

Course coordinator: Dr. Haytham Al-feel   Head of Department: Dr. Amira Edress