



Najran University
College of Computer Science and Information Systems
Department of Computer Science

COURSE SPECIFICATIONS (CS)

Course Name: Operating Systems
Course Code: 227CSS-3

Prepared By:

MUHAMMAD AKRAM

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Course Specifications

Institution: Najran University	Date: 30/8/2017
College/Department : College of Computer Science and Information systems, Department of Computer Systems Department of Information Systems	

A. Course Identification and General Information

1. Course title and code: Operating Systems (227CSS-3)			
2. Credit hours: 3 (2,2,1)			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor Degree Program			
4. Name of faculty member responsible for the course Muhammad Akram (Course Instructor Theory) Mr. Mohammed Basit Kamal (Lab Instructor) Mr. Mohammed Basit Kamal (Course Coordinator)			
5. Level/year at which this course is offered: Level 6/3 rd year including preparatory year.			
6. Pre-requisites for this course (if any): 111CSS-4			
7. Co-requisites for this course (if any): N/A			
8. Location if not on main campus: Offered at Main Campus of the College and Girls Campus			
9. Mode of Instruction (mark all that apply):			
a. traditional classroom	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
b. blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100%"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
Comments:			
Mainly following teaching strategies are used in classroom:			
<ul style="list-style-type: none"> Showing and delivering PPT presentation in the class. 			

- Solving scheduling algorithms on white board to explain the solution in more detail.
- Motivating students to be active during class by asking questions regularly.
- Five minutes before the end of every lecture, I will bring one student in front of class to briefly explain what we learn in today's lecture. (I predict that this strategy will be very helpful to boost the student confidence)
- Motivating students to work in home, to search from internet, to read related reference books by giving them assignments related to operating system types, comparison and scheduling algorithms.
- Video Lectures also uploaded on blackboard, so students can see the video lectures any time to get explanation of topic.

B Objectives

1. What is the main purpose for this course?

Upon the successful completion of this course, students will be able to:

- Describe operating system history, services, applications and types.
- Apply UNIX commands to perform essential operations.
- Illustrate various algorithms of processes, threads, scheduling, synchronization, deadlock, memory management and file system.
- Explain operating system support for processes, threads, scheduling, synchronization, deadlock, memory management and file systems.
- Develop programs to make use of various systems calls and implement standard problems/algorithms related to operating systems concepts.
- Evaluate the different algorithms for CPU Scheduling, synchronization, and deadlock.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Teaching using multimedia presentation along with text and reference books.
- Conducting active participation of students during class by question/answer session using the board with detailed explanation.
- Initiating explanations/discussions of various scheduling algorithms, deadlock prevention method etc. by students.
- Before the end of every lecture, one student will be selected from class to come front to briefly explain what we learn in today's lecture. (Hopefully this strategy will be very helpful to boost the student confidence).
- Video lecturer will also be available for students through blackboard.
- Contents are reviewed and revised after every two years.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Introduction, history and evolution of operating systems, operating system structure. Introduction to basic UNIX Commands and vi editor, process management and scheduling, inter process communication, process coordination and synchronization, threads (overview, multithreading model and threading issues), CPU scheduling (Basic concepts and scheduling algorithms), deadlocks (deadlock characterization, methods for handling deadlock), deadlock prevention, deadlock avoidance and detection, memory management and introduction to file management.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Overview of Operating System	1	4
Operating System Structure	1	4
Introduction to UNIX commands	1	4
Process Concept	1	4
Multithreaded Programming	1	4
Process Scheduling	2	10
Process Synchronization	1	5
Deadlocks	2	10
Memory Management Strategies	1	5
Virtual Memory Management	1	4
Implementing File Systems	2	8

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planned	30	6		30	-	66
	Actual	30	6		30		66
Credit	Planned	30			30		60
	Actual						

3. Additional private study/learning hours expected for students per week.

5 - 8 hours

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

At least 5-8 hours per week to refresh the topics discussed during the lectures, tutorials and in the Lab preparation depending on students' ability to understand the class.

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Describe operating system history, services, applications and types.	Lectures, active learning, collaborative and cooperative learning and independent study assignments are used as teaching strategies. <ul style="list-style-type: none"> Showing and delivering PPT presentation in the class. Using white board to explain important points in more detail. Motivating students to be active during class by asking questions regularly during lecture. Motivating students to work in home, to search from internet, to read related reference books by giving them assignments related to operating system and OS security. Let students to solve scheduling problems in small groups and giving correction on their solution during class. Motivating students to be active during class by asking questions regularly. Giving students tutorial related to scheduling algorithms, thread, memory management etc. 	Following methods are used to assess student's knowledge acquire in this course. <ul style="list-style-type: none"> Class Quizzes. Assignment. Midterm exam (Each exam consists of multiple choice questions, true/false, fill in the blanks, and theoretical questions.) Final Exam
1.2	Illustrate various algorithms of processes, threads, scheduling, synchronization, deadlock, memory management and file system.		
1.3	Explain operating system support for processes, threads, scheduling, synchronization, deadlock, and virtual memory and file systems.		
2.0	Cognitive Skills		
2.1	Following are the cognitive skills which are developed in this course:	<ul style="list-style-type: none"> Solving algorithm on white board for students to make them more familiar with various scheduling algorithms. 	Following are the cognitive skills which are developed in this course:

	<ul style="list-style-type: none"> • Explain operating system support for processes, threads, scheduling, synchronization, deadlock, and virtual memory and file systems. • Develop programs to make use of various systems calls and implement standard problems/algorithms related to operating systems concepts. • Apply UNIX commands to perform essential operations. • Evaluate the different algorithms for CPU Scheduling, synchronization, and deadlock. 	<ul style="list-style-type: none"> • Let students to solve scheduling problems in small groups and giving correction on their solution during class. • Motivating students to be active during class by asking questions regularly. • Let students to present their work after group discussion session. • Giving students tutorial related to scheduling algorithm to explain them in more detail. • Motivating students to work in home, to search from internet, to read related reference books by giving them assignments. • Use C and UNIX commands, and develop various system programs under Linux to make use of OS concepts related to System calls, CPU Scheduling, process synchronization during lab session. 	<ul style="list-style-type: none"> • Explain operating system support for processes, threads, scheduling, synchronization, deadlock, and virtual memory and file systems. • Develop programs to make use of various systems calls and implement standard problems/algorithms related to operating systems concepts. • Apply UNIX commands to perform essential operations. • Evaluate the different algorithms for CPU Scheduling, synchronization, and deadlock.
3.0	Interpersonal Skills & Responsibility		
3.1	<p>Following are the interpersonal skills which are developed in this course:</p> <ul style="list-style-type: none"> • Response in class discussion. • Developing oral presentation skills. • To show the report on finding on assigned tasks. 	<ul style="list-style-type: none"> • One individual assignments which require investigation using provided reading material, library resources as a means of developing the self-study. • Student presentation to present their finding on assigned problems. • Explanation and examples given in class lectures. • Introductory class to make the students alert and be conscious about the class attendance, timing, discipline during the contact hours. 	<p>Capacity for independent study assessed in individual assignment.</p>
4.0	Communication, Information Technology, Numerical		

4.1	<ul style="list-style-type: none"> Demonstrate the efficient use of Linux. Solving problems using scheduling algorithms that require numerical skills. Assigning exercise program during the lab. To illustrate the important components of communication skills and based on developing critical skills, observations, experiments, and feedback. Encouraging & motivating the students to use the library and internet resources. Operate Microsoft office for data analysis and prepare reports. 	<ul style="list-style-type: none"> Group discussion. Showing and delivering PPT presentation in the class and PDF format of course book. Showing how to operate and work with Red Hat Linux operating system. One individual assignments which require investigation using provided reading material, internet search and library resources as a means of developing the self-study. Let students prepare their Lab reports in the Class using MS WORD and other software tools Giving correction in Lab activity. 	<ul style="list-style-type: none"> Assignments. Lab Exams. Encouraging self-assessment during the learning process.
5.0	Psychomotor		
5.1	N/A		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Quiz # 01	3 th week	2%
2	Quiz # 02	6 th week	3%
3	Assignments	9 th week	5%
4	Mid Term Exam-I	TBA	15%
5	Mid Term Exam-II	TBA	15%
6	Make up Mid Term Exam (<i>Only for exceptional cases</i>)	TBA	15%
7	Mid Lab Exam	TBA	10%
8	Final Lab Exam	TBA	10%
9	Final Exam	Final Examination 24-04-1439	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

During the whole semester 10 hours/week are reserve for students to guide them, to help them, to explain them topic which are not clear for them etc.

E Learning Resources

1. List Required Textbooks
<ul style="list-style-type: none"> "Operating System Concepts", A. Silberschatz , Galvin and Gagne, 8th Edition , John Willey & Sons
2. List Essential References Materials (Journals, Reports, etc.)
<ul style="list-style-type: none"> "Modern Operating Systems", Andrew S. Tanenbaum., Third Edition , Prentice Hall <p><u>Note:</u> Handouts will be distributed in class, when appropriate, to cover some of the course topics.</p>
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
White board
4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
N/A


F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
Lecture Rooms with 20 seats with smart table, Mic, Speaker, PC, Auto Projector with Screen, WIFI for virtual class and a white board or An smart board (male Section)
2. Technology resources (AV, data show, Smart Board, software, etc.)
Desktop/ Laptop computer Multimedia Projector
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
A File cabinet to keep Class Stuffs, Markers, papers and students Files, and a printer to print program screen shots.

G Course Evaluation and Improvement Processes

<p>1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <ul style="list-style-type: none"> Collecting students' questionnaire about the faculty and teaching. Collecting students' suggestions to facilitate more during the class. Student's questioner once during semester. Meeting with course coordinator and college coordinator periodically.
<p>2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <ul style="list-style-type: none"> Assistance from colleagues. Independent assessment of standard achieved by students.
<p>3. Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> Note down the problem that face during class and try to solve those problems by discussing senior faculty members. Learning best teaching methods from the best teacher amongst all faculty members. Workshops to facilitate the exchange of experiences amongst faculty members.
<p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <ul style="list-style-type: none"> Getting feedback from the students who will pass the course and work in the practical field.
<p>5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> Preparing Course Report Planning to update Course syllabus

Name of Course Instructor: Muhammad Akram

Signature:  Date Specification Completed: 30/8/2017

Program Coordinator: _____

Signature:  Date Received: _____