

Syllabus / Course Outline

Course Name: Operating Systems		
Course Code: COMP301	Course Type: Compulsory	Course Credits: 3
Class Timings: Sec A: MW 11:00-12:50 Sec B: TR 11:00-12:50	Section: A	Student Meeting Hours/ Office Hours: MTWR 1000-1100Hrs
Instructor Name: Muhammad Salman Chaudhry		
A Note from the Instructor: <ul style="list-style-type: none">- <i>There will be synchronous online interactive sessions for Blended or Fully Online modes of teaching for students that are at homes. In case of fully in-person mode, there will be no online activity.</i>- <i>You are expected to attend all sessions, whether online or in-person and try to be interactive for a better learning experience.</i>- <i>This course has practical applications substantially so keep those programming skills up to date for better outcome. At the same time mathematics is at the core of each concept so keep yourself updated in that domain too.</i>		
Instructor Contact Details <p>Email: salmanchaudhry@fccollege.edu.pk Other: Office Hours (face to face and/ or online): Online on appointment Guidelines for contacting instructor: Email/Course group (Facebook post/messenger)</p>		

Course Description:

Pre-requisites:

Data Structures & Algorithms, Digital Logic Design, Computer Organization and Assembly Language

Mode of Instruction (Asynchronous/Synchronous):

Both, each class will be on Zoom and Video lectures will be provided.

Mode of peer-to-peer Contact Among Students:

For text, you can communicate on Facebook Messenger whereas Zoom can be used for online interaction.

Main Mode of Instruction: *Gmail, Moodle, Zoom*

Technology Requirements: A Desktop/Laptop computer with Ubuntu/Windows with moderate specs.

Technology Etiquettes *Be respectful to others in any mode of interaction*

Considerations for Students with Limited Internet/Technology Access: *Video Lectures and Moodle*

Lab Resources: *Have the software installed in your computers as instructed in the course group*

Course Objectives or [Student Learning Outcomes](#) (SLOs)

1. To fully understand how digital images are represented and stored
2. To learn how to perform various operations on digital images in different representation domains
3. To apply and use image processing techniques for solving real world problems related to this field

Tentative Course Content, Learning Material & Activities Schedule

Week	Topic	Readings	Assessments Due
Overview			
1,2	Course Overview and Introduction, Operating-System Structures, Services, User/OS Interfaces, System Calls Lab-1	Text 1.1 - 1.11, 2.1-2.10	
3	Process Concept, Scheduling, Operations Inter-process Communication and Examples, Communication in Client – Server Systems	3.1-3.9	Quiz-1
4	Threading, Multi-core Programming Multithreading Model, Thread Libraries, Implicit Threading and Issues, Examples Lab-3	4.1-4.7	Assignment 1
5	CPU Scheduling, Scheduling Criteria, scheduling Algorithms, Thread Scheduling, Multiple-Processor Scheduling, Lab-4	5.1-5.3	Quiz-2
6	Real-Time CPU Scheduling, Operating-System Examples, Algorithm Evaluation, Deadlocks, System Model, Deadlock Characterization, Methods for Handling Deadlocks	5.4-5.8	
7	Process Synchronization, The Critical-Section Problem, Peterson’s Solution, Synchronization Hardware, Mutex Locks, Semaphores Lab-5	6.1-6.6	Assignment 2 Quiz-3
8	Classic Problems of Synchronization, Synchronization Examples Alternative Approaches Lab-6	7.1-7.3	
9	Mid-term review and Exam		
10	Deadlock Prevention, Deadlock Avoidance Deadlock Detection, Recovery from Deadlock	8.1-8.8	
11	Main Memory, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table, Examples Lab-7	9.1-9.7	Quiz-4

12	Virtual Memory, Demand Paging. Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing	10.1-10.10	
13	Mass-Storage Structure, Disk structure, attachment, scheduling, management, RAID structure Lab-8	11.1-11.8	Assignment 3 Quiz-5
14	File System Interface, File Concept. Access Methods, Directory and Disk Structure, Protection Lab-9	13.1-13.4	
15	File- System and Directory structure and implementation, Allocation Methods, Free space management, Efficiency, Recovery, File-System Mounting, File Sharing, NFS Lab-10	14.1-14.7, 15.1-15.4	Quiz-6
16	Final review		Assignment 4

‘Out-of-class’ Study Required (across all 3 categories of students -- those attending in-person, online, or asynchronously)

In-person: Attend lectures in-person, perform all activities on Moodle

Online: Attend Zoom lectures, perform all activities on Moodle

Asynchronous: Watch YouTube videos, perform all activities on Moodle

Textbooks, Materials, Supplies, and other Resources

TEXT BOOK Operating Systems Concepts by Silberschatz, Galvin, Gagne

REFERENCE BOOK Understanding Digital Signal Processing (3rd Edition) by Richard G. Lyons, Prentice Hall; 3rd edition (2010)

All course material will be made available on the course shared Google Drive, the link of this drive can be obtained on Moodle

Course Requirements:

Describe each graded component in enough detail that students will have a general understanding of the amount of and type of work required. Include information about the assignment's purpose and rubric for assessment as applicable

Class Participation

Based on attendance and class discussion

Assignments

Programming assignments, code plagiarism will be detected and heavily penalized

Quizzes

Conducted on Moodle

Labs

Lab will be demonstrated, and lab task will be posted on Moodle

Midterm Exam

Assignment style, submitted on Moodle

Final Presentation, Viva

In-person/on-camera presentations and viva will be conducted depending on the scenario

The tentative breakup is as follows:

Class Participation	5%
Assignments:	20%
Quizzes:	20%
Labs:	10%
Midterm exam:	20%
Final Exam	25%
TOTAL	100%

Attendance Policy:

All students are expected to attend all classes.

Classroom Participation:

Try to engage in questions and answers during the lectures.

Grade Determination & Course Assessment as per FCC Policy:

In case of high-class average, absolute grading is expected. In case of low-class average relative grading can be used.

Grading Legend

Below is the grading legend of FCCU (published in all catalogues and available on the FCCU website) as approved by the Academic Council

Grade	Point Value	Numerical Value	Meaning
A	4.00	93-100	Superior
A-	3.70	90-92	
B+	3.30	87-89	Good
B	3.00	83-86	
B-	2.70	80-82	
C+	2.30	77-79	Satisfactory
C	2.00	73-76	
C-	1.70	70-72	
D+	1.30	67-69	Passing
D	1.00	60-66	
F	0.00	59 or below	Failing

Student Conduct & Other Issues:

All students are expected to remain civil, respectful, and supportive.

Changes to the Syllabus:

This syllabus was designed to convey course information and requirements as accurately as possible. It is important to note however that it **may** be subject to change during the course depending on the needs of the class and other situational factors. Such changes would be for your benefit and you will be notified of them as soon as possible.

Student Support Services

[Student Counseling Services](#). Students can contact the [Campus Counseling Center](#) at 0331-444-1518 or email ccc@fccollege.edu.pk.

[Writing Center](#)

[Mercy Health Center](#)

Other Useful FCCU Policy Documents:

[Sexual Harassment Policy](#)

[Anti-Corruption Policy](#)

[Academic integrity](#)

[Plagiarism Policy](#)

[Academic Calendar](#)

Important Notices:

I expect that you will strictly follow the core values of FCCU and put your entire efforts to learn as per the course requirements, attend classes, read the textbook(s)/other assigned reading material and do the assignments in the stipulated time period

I generally respond to emails anywhere between the hours of 9 AM and 9 PM based on time availability. If I do not respond within 48 hours, feel free to send a follow-up email.

This class is available 24/7 but the instructor is not. I will respond to an email Monday through Friday (until 3 pm) unless it is a holiday or extenuating circumstances intervene. During the workweek, you can expect a response within 24 hours, and I expect the same courtesy from my students.