



Jordan University of Science and Technology
Faculty of Computer & Information Technology
Computer Science Department

CS775 Advanced Operating Systems

First Semester 2020-2021

Course Catalog

3 Credit Hours. 3 Credit hours (3 h lectures). This is a graduate-level class whose goals are: 1) to emphasize the traditional topics in Operating Systems including: Structures, Processes, Threads, CPU Scheduling, Process Synchronization, Virtual Memory Management, File Systems, I/O Subsystem, Virtualization Techniques, etc. 2) to understand the state-of-the-art in operating system design and implementation, 3) to understand how operating systems research is done, 4) to investigate novel ideas in the area via small group research projects, and 5) to delve into various topics involving advanced operating system design. Furthermore, this course intends to expose students to the operating systems as a research field and study operating systems from the design point of view. Students will be guided to examine different systems in both important historical context and recent research developments. This part involves readings on classic and new papers. In addition to teaching various system techniques, the objectives are to help students learn: ? How to read a research paper in an objective manner, ? How to write a critical analysis of the research described in a paper, ? How to articulate ideas and insights into a research paper, ? How to compare and contrast different approaches to understand their trade-offs, and ? How to synthesize research themes and topics across multiple papers.

Text Book

Title	Operating System Concepts
Author(s)	Abraham Silberschatz, Peter Galvin, & Greg Gagne
Edition	10th Edition
Short Name	Ref #1
Other Information	Main reference

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Operating Systems: Internals and Design Principles	William Stallings	9th Edition	
Ref #3	Operating Systems Design and Implementation	? Andrew S Tanenbaum Albert S Woodhull	3rd Edition	

Instructor	
Name	Dr. Ahmad Alzubi
Office Location	A1 Level-3
Office Hours	Sun : 11:30 - 13:00 Mon : 10:00 - 11:30 Tue : 11:30 - 13:00 Wed : 13:00 - 14:30
Email	agalzubi@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 11:30 - 13:00 Room: منصة الكترونية

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Introduction to O.S. and Linux	Chapter 1 From Ref #1
Weeks 3, 4	Operating-Systems Structures and Processes	Chapter 2 & 3 From Ref #1
Week 5	Threads & Concurrency	Chapter 4 From Ref #1
Week 6	CPU Scheduling	Chapter 5 From Ref #1
Week 7	Process Synchronization	Chapter 6 & 7 From Ref #1
Week 8	Deadlocks	Chapter 8 From Ref #1
Week 9	Memory Management	Chapter 9 & 10 From Ref #1
Week 10	I/O Systems	Chapter 12 From Ref #1
Weeks 11, 12	File System	Chapter 13 & 14 From Ref #1
Week 13	Security & Protection	Chapter 16 & 17 From Ref #1
Week 14	Virtual machines	Chapter 18 From Ref #1
Week 15	Final Project Presentations	
Week 16	Final Exam	

Relationship to Program Student Outcomes (Out of 100%)					
SO1	SO2	SO3	SO4	SO5	SO6

Evaluation	
Assessment Tool	Weight

Midterm Exam	20%
Final Exam	50%
Term-paper Project	30%

Policy	
Attendance	Attendance is very important for the course. In accordance with university policy, students missing more than 20% of total classes are subject to failure. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class.
Assignments	Several assignments including TERM-PAPER project will be assigned and submitted electronically using the e-learning system. Cheating is prohibited under JUST strict laws. No late submissions are accepted.
Exams	The format for the exams is generally (but NOT always) as follows: General calculations, Multiple-Choice, True/False, Analyze a Problem, Short Essay Questions, etc.

Date Printed: 2020-11-22