



Course Syllabus
Dept. of Computing– CSIS
College of Engineering and Applied Sciences

Course Prefix/Number: CSIS 310

Course Title: Introduction to Operating Systems

Core IS/Elective other majors

Class Meeting Times: 9:00 pm - 9:50 pm, TRU

Instructional Modality: On Campus

Class Location: A101

Instructor: Dr. Iyad Abu Doush

Office Location: B 407

Office Phone: 3734

Email: idoush@auk.edu.kw

Office Hours: UTR [11:00-1:00]
[Subject to change]

AUK Mission Statement:

The American University of Kuwait is a liberal arts institution dedicated to teaching, learning, and scholarship. The University offers programs that provide students with the knowledge and skills necessary for lifelong learning and professional success. AUK enriches society by fostering an environment that encourages critical thinking, effective communication, personal growth, service, and leadership.

College Mission Statement:

The College of Engineering and Applied Sciences (CEAS) is committed to cultivating an inspiring and innovative learning environment that contributes to a culture of lifelong learning driven by the core values of liberal arts education. In its pursuit of excellence in teaching, research and community engagement, the College offers high quality programs in Engineering and Computing.

Department Mission Statement:

The mission of AUK's Department of Computing is to provide its students with a quality education based on computing fundamentals, entrepreneurship, and the Liberal Arts. The Department will prepare its graduates for successful careers in industry, government, and graduate studies, as well as lay the foundation for lifelong learning

Catalog Course Description:

This course introduced students to the study of supervisory programs. The course will, start with a brief historical perspective of the evolution of operating systems and then cover the major components of the most operating systems such as process management (processes, threads, CPU scheduling, synchronization, and deadlock), memory management (segmentation, paging, swapping), files systems; and operating system support for distributed systems. This course will allow students to have an opportunity to learn a lot of practical information about how programming languages, such as: Java, C and C++, operating system, and architectures interact and how to use each effectively. Students will also gain an experience on how to use Linux as an operating system. Prerequisite: CSIS 210.

Course Prerequisites

CSIS 210.

Course Outcomes

Upon completion of this course the student should:

- 1) Understand what an operating system is, what its purpose is, and what its components are. [ABET SO1]
- 2) Evaluate and compare scheduling algorithms on real scenarios. [ABET SO1]
- 3) Identify and rectify synchronization problems. [ABET SO1, SO2]
- 4) Differentiate between deadlock and non-deadlock situations.[ABET SO1]

- 5) Evaluate a number of memory management techniques on the basis of memory utilization. [ABET SO1]
- 6) Write programming assignments demonstrating the concepts of threads and multithreading. [ABET SO1, SO6]
- 7) Use of Linux operating system [ABET SO2]

Textbook and Course Material

- **Required text**

- Operating Systems Concepts, 9th Edition (International edition), Silberschatz A., Galvin P. and Gagne G.; John Wiley & Sons Inc., ISBN: 978-1-118-09375-7, 2013.
- Linux for Programmers and Users, Glass G. and Ables K.: Pearson, 978-0131857483, 2007.

- **Recommended Texts & Other Readings**

Modern Operating Systems, 4th Edition (Global edition), Tanenbaum A. and Bos H.: Pearson, 2015.

- **Communication and Course Material**

All supportive course material, assignments, and communication will be done through email and moodle. Make sure you regularly check your email/moodle accounts.

- **Grading Scheme**

Assessment	Percentage	Notes
2 Exams (2 x 20)	40%	30 Mar, 11 May
Programming assignment	15%	Fork and multithreading
Linux lab in-class assessment	15 %	
Final Exam	30%	

- **AUK Official Grading Scale:**

Letter Grade	Percentage	University Points
A	94-100	4.0
A-	90-93	3.7
B+	87-89	3.3
B	84-86	3.0
B-	80-83	2.7
C+	77-79	2.3

C	74-76	2.0
C-	70-73	1.7
D+	67-69	1.3
D	64-66	1.0
D-	60-63	0.7
F	0-59	0.0

Course Policies and Strategies

Strategies for Success

- Ask questions in class for you are here to learn and part of learning is asking questions. I am of the philosophy that there is no silly question to ask. So please, please if you are in doubt or something is puzzling you then do ask me a question, to repeat what I said, to explain it in another way, to slow down, etc
- I strongly encourage you to take advantage of my office hours if you need any help with class work. I have my office hours posted on the syllabus, office door and on Moodle. If you want to see me but cannot make the office hours then either talk to me before or after class or email me so that we can schedule a time that suites both of us.
- Make use of the Student Success Center. They offer free tutoring for anyone who needs help in this class. The center usually has several people who can help for this class, so try working with each one and see who you prefer to work with and are more comfortable with.

AUK Attendance Policy:

The American University of Kuwait recognizes that class attendance is an important element of students' classroom success. Students are expected to attend all classes, laboratories, and/or required fieldwork. Because excessive absences prevent students from receiving full course benefits and disrupt orderly course progress, AUK has established the following policy on class attendance. Any student who misses more than 15% of class sessions of any course during a semester should expect to fail, unless s/he submits documented evidence to the course instructor of inpatient medical care, death of an immediate family member, academic instructional activities, or national athletic activities. If excused, students are required to satisfy all coursework due or assigned during their absence as determined by the course instructor. If a student does not submit documented evidence for her/his absence exceeding the limit, it is the student's responsibility to withdraw from the course by the specified deadline, as indicated on the academic calendar. Students who withdraw from a course receive a grade of "W". Students who do not withdraw from a course nor submit supporting documents for excessive absences will receive a grade of "FN" (failure for non-attendance).

Code of Academic Honesty and Integrity:

Upon admission to the American University of Kuwait, students agree to act responsibly in all areas of academic, personal and social conduct and to take full responsibility for their individual and collective action. Such regulations are found in the American University of Kuwait Catalogue, Student Handbook, and the AUK website at www.auk.edu.kw. Any question of interpretation regarding the code of academic honesty and Integrity shall be reported to the appropriate academic dean. The Code shall be reviewed annually at the discretion of the academic deans. Any student or student organization found to have

committed the cited violations or misconduct, either on or off campus, is subject to the disciplinary sanctions outlined in adjudication procedures.

Email and Classroom Response Times

I will check my email at least once a day, not including weekends or holidays. During the week, I will respond to all emails within 24 hours. Over the weekend (starting Thursday at 5 p.m.) I will respond to all emails within 48 hours. During holidays and school breaks, response may take longer. All assignments will be returned within 10 days after the due date.

Exams

These exams are designed to measure the ability of the student to use and apply the learning material. Every learning activity may be tested, that includes (but is not limited to) topics discussed in the classroom, assigned tasks, readings, and project-related activities.

Makeup Exams

No makeup exam will be given unless all of the following three steps are performed: (1) The student notifies the course instructor (in writing or by email) about the reasons for missing the exam at least 24 hours before the set exam date, (2) The instructor permits the makeup exam at another date and lists the papers (medical or otherwise) required for the makeup, and (3) The student submits the required papers.

Mobile Phones

The use of mobile phones is strictly prohibited during class.

Academic Support:

Learning Support Services focuses on empowering students to become independent and successful learners by developing their literacy skills, enhancing their understanding, and helping them improve their academic and study skills. Learning Support Services is comprised of two centers: the Tutoring Center and the Writing Center. The Tutoring Center provides free academic support in various subjects to AUK student. Email: tutoringcenter@auk.edu.kw.

The Writing Center provides multilingual support (English, Arabic, French, and Spanish) through individual or small-group consultations. Email: writingcenter@auk.edu.kw

Disability Accommodations:

AUK provides equal and inclusive educational environment in order to enable all students to meet and perform requisite academic standards and to participate in the opportunities and activities of its community. If you believe you can benefit from accommodations for a learning, physical, or mental health disability, [click here to book a session through the Counseling Center/Disability Services Booking Page](#), to ask about disability services at AUK, initiate an accommodation plan, or receive disability services. You can also email counseling@auk.edu.kw if you need assistance in booking a session.

Student Responsibilities:

During each week, students are expected to:

- Check Moodle course website regularly.
- Complete and submit assigned work on time
- I expect you to ask questions if something is unclear.

Late and Missing Work Policy:

All assignments must be submitted on time. Any assignments received after the deadline would be deducted 10% from each late day, except in the case of a documented emergency. The instructor must be notified within one week of the assignment that is to be considered for late submission in the case of an emergency. The purpose of these deadlines is to help you stay on track to complete all materials in a timely manner.

Library Resources

The AUK Library provides you with the necessary support to conduct research and find additional readings for your class work. Need to research but don't know where to start? Not sure how to find and use online resources (books, data, articles...etc.)? Not sure how to cite a source or develop a reference list? Ask a librarian! Research help is available through email, MS Teams, Zoom. Contact the library at: library@auk.edu.kw or go to <https://www.auk.edu.kw/academics/Library> to begin your search!

Plagiarism

The term "plagiarism" includes, but is not limited to, an attempt of an individual to claim the work of another as the product of his/her own thoughts, regardless of whether that work has been published. Plagiarism includes, but is not limited to, quoting improperly or paraphrasing text or other written materials without proper citation on an exam, term paper, homework, or other written material submitted to an Instructor as one's own work. Plagiarism also includes handing in a paper to an Instructor that was purchased from a term paper service or downloaded from the Internet and presenting another person's academic work as one's own.

Cheating

The term "cheating," includes but is not limited to, copying homework assignments from another student; working together with another individual on a take-home test or homework when specifically prohibited from doing so by the Instructor, looking at and/or copying text, notes or another person's paper during an examination when not permitted to do so. Cheating also includes the giving of work information to another student to be copied and/or used as his/her own. This includes but is not limited to giving someone answers to exam questions either when the exam is being given or after having taken an exam; informing another student of specific questions that appear or have appeared on an exam in the same academic semester; giving or selling a term paper, report, project or other restricted written materials to another student.

Dishonesty in Papers

Papers submitted in courses must be the original work of the student with appropriate citations and references. Papers or other reports prepared by another person or purchased from another person or company and submitted as one's own work is a violation of academic honesty.

Dishonesty in Exams

This includes the use of unauthorized materials, receipt of information and/or answers from others during the examination, or the transferal of unauthorized materials, information or answers to another student.

Work for One Course Submitted for Another

Work submitted for one course may not be submitted for another. It is a violation of academic integrity to submit the same work in more than one course. The incorporation by students of past writing or research into current projects must be clearly indicated.

Adjudication of Academic Dishonesty and Integrity

The University reserves the right of imposing on the violators of academic honesty disciplinary action ranging from a failing grade in the exam, paper or course to suspension or dismissal from the University. For more information refer to the "Academic Dishonesty" policy in the University Undergraduate Catalog, refer to the following link:

http://auk.edu.kw/about_auk/policy_procedure.jsp

Communication Policy:

Please be sure to use your official AUK email account, write your full name, and indicate which class and section you are taking (Class ###, DAY/TIME section) when you send me an email. If you have a question, please check the syllabus first and if your question is not answered there, then please feel free to send an email and I will be happy to clarify. I respond to questions via email or posted on the discussion forum within 24 hours of receiving them. Emails sent on weekends will be responded to on Sunday.

Technology Issues:

All assignments must be submitted through Moodle. However, you may experience trouble submitting an assignment due to technology or internet issues. If such a situation does arise and you are unable to submit your assignment through Moodle, please send me an email at jdoush@auk.edu.kw and include the **completed** assignment. Please make sure that you email me the assignment **before** the deadline as this documents that you did finish everything by the due date and time, but that you just had a technology issue. This will ensure that your assignment will be accepted, and you will not receive a late penalty. Once the technology or internet issue is resolved, please upload the assignment to Moodle. In general, always be sure to frequently save your files and keep backups of your assignments.

Tentative Course Outline

Note: Saturday 18-Mar we have a class

Week	Topic	Notes
1	Introduction	
2	Cont. Introduction	
3	Linux Lab	Lab component Lab 1(Linux)
4	Process Concept, scheduling, operations on processes, and interprocess communications (Programming fork – shared resources)	Lab component
National Liberation Day and Spring Break (26-Feb to 2-Mar)		
5	Multithreading Programming Implicit programming, threading issues OS examples	Lab component
6	Lab – programming multithreading	Lab component
7	Process Scheduling Thread scheduling	Exam 1
8	OS examples	Lab component Programming assignment
9	Synchronization The critical section problem, Peterson’s solution, synchronization HW, Mutex locks, semaphores, and some classic synchronization problems.	
10	Deadlocks	
11	Memory-management strategies Swapping,	
12	Contiguous memory allocation, segmentation,	
Eid El-Fitr (23-Apr to 27-Apr)		
13	paging , Virtual-memory management	Exam 2
14	Demand paging, copy-on-write, Page replacement, allocation of frames, and thrashing	
15	Review	
16	Final Exams	

Syllabus Changes:

There may be changes to the schedule and syllabus during the semester. When this happens, I will inform you in class and over email.

Mapping to ABET Student Outcomes:

	SO-1	SO-2	SO-3	SO-4	SO-5	SO-6
1	X					
2	X					
3	X	X				
4	X					
5	X					
6	X					X
7		X				

	Learning Outcomes (SO)
1	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3	Communicate effectively in a variety of professional contexts.
4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6	Apply computer science theory and software development fundamentals to produce computing-based solutions