Basic Course Information:

Course Prefix/Number: CSIS 329
Course Title: Intro to Computer Architecture
Core/Elective Course: Core
Class Meeting Times: 16:00-16:50
Instructional Modality: Onsite
Class Location: A103
Credit Hours: 3

Instructor: Dr. Aaron Rasheed Rababaah
Office Location: B406
Office Phone: x3702
Email: arababaah@auk.edu.kw
Office Hours: 12-13&14-15 UTR
Prerequisites: CSIS 210

AUK Mission Statement:
The American University of Kuwait is a liberal arts institution based on the American model of higher education. It is dedicated to providing students with knowledge, self-awareness, and personal growth experiences that can enhance critical thinking, effective communication, and respect for diversity. AUK seeks to create leaders and lifelong learners who aspire to the highest standards of moral and ethical responsibility in their societies.

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.

Catalog Course Description:
An introduction to digital computer hardware architecture and organization. Topics include data representation, digital logic, processor design, instruction set architecture, memory and system performance. Part of the course will focus on parallel and distributed computing.

Course Learning Outcomes:
Upon successful completion of the course, students will be able to:
1. Apply data representation in computer system
2. Demonstrate CPU basics and organizations of a computer system
3. Explain instruction set architectures, addressing schemes and instruction level Pipelining architecture
4. Understand memory management system, different types of memory cache and virtual memory

5. Gain skill in digital design of simple to complex computer circuitry
6. Apply performance measurement and analysis techniques.
7. Use simulation software to model and simulate basic, intermediate and advanced computer hardware components
8. Acquire a good introduction and hands-on experience in parallel computing
9. Acquire a good introduction and hands-on experience in distributed computing

ABET Student Outcomes (SOs):

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. [**CS only**]
6. Support the delivery, use, and management of information systems within an information systems environment. [**IS only**]

	SO1	SO2	SO3	SO4	SO5	SO6
1		X				
2		X				
3		X				
4						X
5						X
6						X
7		X				
8						X
9						X

Course Delivery/Methodology:

For this course we will be meeting in-person according to the class times sated above. Couse material will be presented mainly through in class lectures. All course material/lecture slides/readings etc. will be posted on our LMS, Moodle. All assignments must also be submitted through Moodle. To successfully complete this course, it is highly recommended that you complete readings ahead of time, post regularly on the discussion forum, actively participate in class discussions, complete assignment on time etc.

Required Textbook/Required Readings:

1) The Essentials of Computer Organization and Architecture 4th ed., Linda Null, Julia Lobur, 9781284074482, Jones & Barlett 2015 Or the **EBook** available at: amazon [link].

2) Required software
   - Logisim is free software used to simulate the logical operations as well as the design of circuits. It can be downloaded from http://www.cburch.com/logisim/ or https://sourceforge.net/projects/circuit/files/latest/download
   - Logisim is also available on the cloud at: https://www.rollapp.com/

Recommended readings:
Pattamsetti, R. Distributed Computing in Java 9, 978-1-78712-699-2, BIRMINGHAM – MUMBAI, 2017.

Evaluations and Grading:

Homeworks	30%
Project(s)	20%
Midterm in-class Written Exam	20%
Final in-class Written 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

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. For more information refer to the "Academic Dishonesty" policy in the University Undergraduate Catalog, refer to the following link: http://www.auk.edu.kw/about_auk/Student_Code_of_Conduct11OCT10.pdf

Academic Support:
The Writing and Tutoring Center (WTC) 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. WTC offers tutoring and writing consultations to all AUK students, and collaborates with academic departments to continuously develop more effective learning support and classroom workshops. WTC also works with faculty and other support units on campus to recognize and respect the rights and equality of all who seek assistance. Students can schedule appointments through the TutorTrac online appointment system, or they can drop in for assistance. The center also uses various digital platforms to conduct online operations.

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.

Course Policies/Student Responsibilities:

- **Communications**:
  - All students must visit Moodle course site frequently, multiple times a day for new uploads, assignments, announcements, discussion forums etc.
  - Your official AUK email account must be used in email messages.
  - Emails should have at least: you full name, course# and section#.
  - All required work must be submitted via Moodle. In case Moodle has problems, email must be used to secure the deadline. The work still must be uploaded to Moodle when it is back.
- **Late and Missing Work**: all late work will not be accepted if not justified with documented evidence. If late/missing work is not justified with one week after the deadline, automatically gets no credit. Late work may get partial credit based on the instructor's discretion.
- **Exam Make-Ups:** in case of a valid documented evidence, make-up may be granted.

Course Schedule:

Week	From	329	Notes
1	5-Feb	01 - Intro	5-9: Add/Drop
2	12-Feb	02 - Data rep	
3	19-Feb	02 - Data rep	19: Prophet's Ascension
4	26-Feb	03 - Logic Des	26:National&Liberation Day, 27-28&1-2: Spring break
5	5-Mar	03 - Logic Des	
6	12-Mar	04 - KMaps	18: U pattern
7	19-Mar	05 - Memory	23: Ramadan schedule
8	26-Mar	05 - Memory	
9	2-Apr	06 - Intro to Parallel and Distributed	
10	9-Apr	07 - Parallel Programming	9: Midterm grades due
11	16-Apr	07 - Parallel Programming	
12	23-Apr	OFF	23-27: Eid Al-Fitr
13	30-Apr	08 - Distributed Programming	
14	7-May	08 - Distributed Programming	
15	14-May	09 - IO	
16	21-May	10 - Performance analysis	
17	28-May	10 - Performance analysis	
18	4-Jun	Final	4-8: Final Exams

Syllabus Changes:
There may be changes to the syllabus (excluding evaluation and grading) during the semester. If this happens, I will inform you in class, via Moodle announcements and/or via email.