

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs		UUPC Approval <u>2/26/24</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Electrical Engineering and Computer Science College Engineering and Computer Science		
Current Course Prefix and Number CDA 4102		Current Course Title Computer Architecture	
<i>Syllabus must be attached for ANY changes to current course details. See Template. Please consult and list departments that may be affected by the changes; attach documentation.</i>			
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Change WAC/Gordon Rule status** Add <input type="checkbox"/> Remove <input type="checkbox"/> Change General Education Requirements*** Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*See Definition of a Credit Hour.</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.</small> <small>***GE criteria must be indicated in syllabus and approval attached to this form. See Intellectual Foundations Guidelines.</small>		Change description to: Change prerequisites/minimum grades to: CDA 3203 and (COP 2220 or COP 3274C) with minimum grades of "C" Change corequisites to: Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
Effective Term/Year for Changes: Fall 2024		Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone Michael DeGiorgio / mdegiorg@fau.edu / 561-297-0003			
Approved by Department Chair <u>Harik Kalva</u> College Curriculum Chair <u>Hongbo Su</u> College Dean _____ UUPC Chair <u>Korey Sorgan</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____		Date _____ 2/12/2024 _____ 2/13/2024 _____ 2/26/24 _____ 2/26/24 _____ _____	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

CDA 4102-001 CRN 15067, 002 16845

Computer Architecture

3 credits

Sec 001-15067

WF 9:30-10:50 pm, In Person, EDU 119

Sec 002-16845

On Line Live Lecture

Fall 2024

Prof. Bassem Alhalabi

Office: EE 512

Office hours: Wed 11-1 & 2-4, Fri 11-1

Telephone: 561-239-1849 (mobile)

(1st time calling, text me your name)

Email: alhalabi@fau.edu



TA name

Check Canvas

Office

Check Canvas

Office hours

Check Canvas

Telephone

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Email

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Course Description

This course teaches fundamental concepts in computer architecture with emphasis on the impact of the architecture on software performance. Students will learn the concepts by implementing a series of small programming projects to learn and exercise concepts such as pipelining, caching, and instruction level parallelism.

Instructional Method

Section 001 is in-person with recorded lectures.

Prerequisites

CDA 3203 and (COP 2220 or COP 3274C) with minimum grades of "C"

Course Objectives/Student Learning Outcomes

This course is designed to teach the fundamental concepts in computer architecture with emphasis on the impact of the architecture on software performance.

The Accreditation Board for Engineering and Technology (ABET) has specified outcomes expected of students. Listed below are the ABET outcomes and the alignment to the course-level objectives.

ABET Outcomes (1) and (2):

1. An ability to identify, formulate, and solve complex computing/engineering problems by applying principles of computing, engineering, science, and mathematics. (Problem solving)
2. An ability to apply the computing/engineering design process to produce solutions that meet a given set of computing/engineering requirements with consideration for public health and safety, and global cultural, social, environmental, economic, and other factors as appropriate to the discipline. (Design)

Course Evaluation Method

Lab Projects	25%
HW and Quizzes (best 5 of 8)	40%
Final	35%

Course Grading Scale

Grading Scale:

- 95-100: A
- 90-94: A-
- 87-89: B+
- 83-86: B
- 80-82: B-
- 75-79: C+
- 70-74: C
- 60-69: C-
- 50-59: D+
- 49 and below: F

Policy on Makeup Tests, Late Work, and Incompletes (if applicable)

Makeup tests are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student from participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements. Late work is not acceptable. A grade of incomplete will be assigned only in the case of solid evidence of medical or otherwise serious emergency situation.

Special Course Requirements

None

Classroom Etiquette Policy (if applicable)

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

Attendance Policy

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

Required Texts/Readings

Textbook: Computer Systems: A Programmer's Perspective, 3/E (CS:APP3e) by Randal E. Bryant and David R. O'Hallaron, Pearson.

Course Topical Outline (tentative)

- Intro to computer architecture
- Fundamentals of computer design
- Instruction set architecture ISA, RISC system
- Pipelining Concept
- Branch Predictions and exceptions
- Instruction level parallelization
- Memory SRAM, DMA, and memory management
- Cache concept, policies, levels, and performance
- Multicore processor design, message passing, shared memory and consistency
- Multithreading, fine grained, coarse grained, and SMT
- Vector, SIMD, and GPUs
- Intro to SoC and RISC-V