CDA 5155: Computer Architecture Principles

Class Periods: Monday, Wednesday and Friday, 9:35 am – 10:25 am
Location: Online
Academic Term: Fall 2020

Instructor:
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Office Hours: Monday and Tuesday, 5:10 pm – 6:00 pm in https://ufl.zoom.us/j/96330001229

Teaching Assistants: *None*

Course Description
Fundamental design issues of processor and computer architecture, a variety of design approaches for CPU, memory, and system structure. 3 credits.

Course Pre-Requisites / Co-Requisites
CDA 3101, COP 3530, and COP 4600

Course Objectives
This course teaches students fundamental knowledge in computer architecture and microarchitecture. The course covers the basic organizations of computer systems including instruction-set architecture, execution pipeline, memory hierarchy, and I/O subsystem. It also addresses advanced processor microarchitecture issues such as dynamic instruction scheduling, branch prediction, lock-up free caches, instruction-level parallelism, multiple instruction fetch/issuing, speculative execution, etc. to improve computer processor performance. Shared-memory multiprocessor systems with coherent caches to reduce memory access latency are also covered. Finally, it outlines the verification issues of today's microprocessors.

Materials and Supply Fees: *None*

Required Textbooks and Software
- Computer Architecture: A Quantitative Approach
- John Hennessy, David Patterson, Morgan Kaufmann Publishers
- 5th Edition, 2012
- ISBN: 9780123838728

Recommended Materials: *None*

Course Schedule
- Fundamentals of Computer Design
- Instruction Set Principles
- Pipelining: Basic and Intermediate Concepts
- Instruction-Level Parallelism and Its Exploitation
- Review of Memory Hierarchy
- Memory Hierarchy Design
- Multiprocessors and Thread-Level Parallelism
- Data-Level Parallelism: GPU Architectures
- Storage Systems
- Verification of Processor Architectures
- Conclusions and Future Directions

Attendance Policy, Class Expectations, and Make-Up Policy

There is no expectation for attendance due to online teaching. However, the students are required to take the midterm and final exams at the scheduled time. The would be no makeup exams except for medical emergencies with appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homeworks (4)	20 each	20%
Projects (2)	10 each	20%
Midterm Exam	100	25%
Final Exam	120	35%
		100%

Grading Policy

Percent	Grade	Grade Points
91.0 - 100.0	A	4.00
86.0 - 90.9	A-	3.67
81.0 - 84.9	B+	3.33
76.0 – 79.9	B	3.00
72.0 - 75.9	B-	2.67
68.0 - 70.9	C+	2.33
64.0 – 66.9	C	2.00
60.0 - 62.9	C-	1.67
56.0 - 58.9	D+	1.33
52.0 - 54.9	D	1.00
48.0 - 50.9	D-	0.67
0 - 47.9	E	0.00

More information on UF grading policy may be found at:
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.