

Computer Organization

Fall 2023-2024

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Success in this course depends heavily on your personal health and wellbeing. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. Your other instructors and I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the term, before the demands of exams and projects reach their peak.

Please feel free to reach out to me about any difficulty you may be having that may impact your performance in this course as soon as it occurs and before it becomes unmanageable. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Policies and important details:

- Attendance is expected. I may randomly check attendance. Any announcements made in class are considered announced. Sending a follow up email or posting the announcement in MyCourses is just a courtesy, and should not be expected.
- No make-up quizzes and no extensions will be granted. If you know ahead of time that you will be missing a quiz or deadline, please let me know so we can plan accordingly. Otherwise, please contact me as soon as you realize you have missed the quiz/deadline to see the impact on our grade and if anything else can be done.
- You are all welcome to email me any time and I will respond as soon as possible. I receive literally hundreds of emails daily. **Please start your email's subject with the course code "CMPE350:"**. This will help me manage my emails more efficiently and get back to you. I will not respond to emails that are not courteous and proper. (I will not respond to "Hey, " emails.)
- You are expected to work in teams for your projects. Being able to work in a team is a key skill for any engineer.
- While the world of Generative AI such as GPT, keeps evolving, we will adopt a no-use policy for GPT in assignments, labs and HWs for the moment, unless the particular assignment specifies the use of GPT being allowed.

Textbook:

Recommended, not required: Computer Organization & Design: the Hardware/Software Interface MIPS Edition, David Patterson and John Hennessy, Morgan Kaufmann Publishers.

Course Description:

The course covers the important aspects of the design, organization, and performance evaluation of modern computer systems. This includes: computer performance measures, instruction set architecture classification, input/output organization, CPU datapath and control unit design, microprogramming, arithmetic and logic unit design, and the memory hierarchy, including cache levels and virtual memory.

Grading Policy:

Homework Assignments: 20%

Quiz: 15%

Midterm: 20%

Projects: 15%

Final Exam: 30%

Office hours:

Mondays 3pm or Wednesday at 9am; Or email for a different time.

Tentative Schedule:

week 1	Computer Organization Intro
week 2	Performance Performance Performance
week 3	Performance Q1 ISA
week 4	ISA ISA MIPS ISA
week 5	MIPS ISA MIPS ISA MIPS Programming
week 6	MIPS Programming Q2 MIPS DataPath
week 7	MIPS DataPath MIPS DataPath MIPS Control
week 8	MIPS Control Midterm Pipeline
week 9	Pipeline Pipeline Pipeline
week 10	Pipeline Multicycle Memory

week 11	Cache Memory Cache Memory Cache Memory
week 12	Performance Performance Q3
week 13	Operating Systems Virtual Memory Virtual Memory
week 14	I/O Devices I/O Devices Processes