

Computer Architecture

CS 240
Spring 2004

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Office hours: MWF 10:30–11:20am. Tu 12:30–1:20pm and 2:30–3:20pm. Other times by appointment.

Class: Hoffberger 149, MWF 1:30–2:20pm.
<http://phoenix.goucher.edu/~kelliher/s2004/cs240/>

Objectives: The main objective of this class is for you to learn how a computer is organized to execute programs. A secondary objective is learning how the organizational building blocks of a computer are constructed from smaller building blocks (i.e., combinational gates and memory elements).

We will consider the major organizational components of modern computer systems: arithmetic logic unit (ALU), control, memory hierarchy, and I/O. We will study things such as high speed addition and multiplication circuits, ways of implementing control logic, pipelining, caches, and paging hardware. Some of these are basic requirements of all general purpose computers, while others, such as pipelining and caches, are performance enhancements.

We will also study how microarchitectural techniques are employed to speed execution, learn about multiprocessors, learn how an architect designs an architecture to solve a specified class of problems.

Expectations: You are expected to have retained all material from CS 220.

Textbook: D. A. Patterson and J. L. Hennessy, “Computer Organization & Design: The Hardware/Software Interface,” 2nd ed., Morgan Kaufmann, 1998. Required.

Grading: **Grade Distribution**

A = [92–100], A- = [90–92), B+ = [88–90), B = [82–88), B- = [80–82), etc. Grades are “one point rounded.”

Course Point Distribution

There are tentatively 700 total points for the course:

1. Assignments. There will be approximately six written assignments. Each assignment will be worth 50 points and due in class. 10% of the maximum grade will be deducted per day from late assignments (the weekend counts as one day). Assignments over three days late will not be accepted.

2. Semester exams. There will be two exams, on the following dates: Mar. 5 and Apr. 16. Each will be worth 100 points. If you need to re-schedule an exam, it is your responsibility to let me know a few days beforehand.
3. Final. There will be a cumulative final, scheduled by SAS. The final is worth 200 points.

Current grades (password protected) may be viewed on the class home page.

Course Handouts:

Course handouts will be made available once in class. After that, they may be obtained from the class home page.

Attendance:

Attendance of classes is expected. It is your responsibility to catch up on missed class work.

Electronic Communication:

From time-to-time, I will need to send e-mail messages to the class. These messages will be addressed to your official Goucher e-mail addresses. You are responsible for checking your e-mail on a timely basis.

Distractions:

Cell phones must be turned off or set to "silent" during class. If you must enter late, do so as unobtrusively as possible. Likewise if you must leave early. Please use mental telepathy if you must hold a personal conference during class. I have ways of making you not talk!

Integrity:

Academic dishonesty will not be tolerated. We are all bound by the Academic Honor Code.