

CSE 30321: Computer Architecture I

Logistics:

Instructor:

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Course Time: Tuesday, Thursday 11:00 a.m. – 12:15 p.m.

Course Location: 101 Jordan Hall of Science

Website: <http://www.cse.nd.edu/courses/cse30321/www/>

Texts:

(1) David A. Patterson and John L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, 4th Ed., Morgan Kaufmann Publishers, ISBN 978-0-12-374493-7; (2) Frank Vahid, Digital Design, John Wiley & Sons, Inc., 2007.

Course Goals:

By the end of this course you should be able to:

1. Employ established architectural performance metrics to explain why one microprocessor might be able to outperform another.
2. Describe the fundamental components required in a single core of a modern microprocessor and how they interact with each other, with main memory, and with external storage media.
3. Explain how code written in a high-level language (like C) is eventually executed “on-chip” to produce the result intended by the programmer.
4. Explain and articulate why modern microprocessors now have more than one core.
5. Suggest, compare, and contrast potential architectural enhancements by applying appropriate performance metrics.
6. Apply fundamental knowledge about single core machines, dual core machines, performance metrics, etc. to design a microprocessor such that it (a) meets a target set of performance goals and (b) is realistically implementable.

Grading Policy:

Homework (8-10)	20%
Labs (5-6)	25%
Final Project	10%
Midterm	20%
Final Exam	25%

Late Policy:

Each student receives 3 days that can be used to turn homework assignments in late. Whenever using one or more of these days on an assignment, you must communicate this to the instructor and designated TA **prior to the deadline**. Each extra day extends the deadline by 24 hours. Homework then can be submitted by e-mail. No late homework beyond the 3 extra days is accepted. Exam dates, final project deadlines, and any lab demonstration deadlines are firm and *cannot* be extended with late days. (More specifically, homework assignments will be due at the end of a given class period. However, if you wish to use a late day, you'll need to email me before the start of class on the day the assignment is due – i.e. before 11:00 a.m.)

Collaboration Policy:

- Generally, there will be a weekly assignment that is due at the end of class on the due date. Normally the due date will be about one week from the assignment date although I have tried to take university holidays, etc. into account).
- Homework assignments may be done in groups of 3 or 4 unless otherwise instructed.
- Whether the write up can be done as a group or individually will be noted in the assignment.

Labs...

- will begin the week of September 1st and be held in Cushing 208 unless otherwise noted.
- will be conducted in groups of 2 or 3 unless otherwise noted.
- will usually require a demonstrate *and* some kind of write up (a list of questions to answer, a more formal report, etc.).
- reports and demos will usually be due the following week.
- will usually require between 3-5 hours of work outside of lab

Re-grade policy:

- Requests for re-grades will be considered for 2 weeks after an assignment has been returned and solutions have been posted. After this, no re-grades will be considered.

Where can I get help if I need it?

- I'll have office hours twice each week. Tentatively, office hours will be on Tuesday and Thursday after class (until 1:30 p.m.). I will also be available by appointment.
- All TAs (graduate and undergraduate) will also have office hours. Specific times will be posted on the course website.
- I will be conducting 6-8 "problem sessions" over the course of the semester. More specific information will come via the course website and class announcements. The main purpose of the problem sessions are to work through additional examples, provide information that may help you get started on lab assignments, etc. However, general questions are welcome as well. Detailed solutions to examples covered in the problem sessions will be posted online if other commitments prevent you from attending a given session. (Note that attendance is by no means mandatory.)

Honor Code

- Students are expected to understand and abide by the principles and procedures set forth in the University of Notre Dame Academic Code of Honor (<http://www.nd.edu/~hnr/code/>) and uphold the pledge that "As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty."