Call Number 1843 (Fall 2003)

URL: http://www.ece.lsu.edu/tca

Offered by:
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   Tentative office hours: Monday & Wednesday: 14:00–15:00, Tuesday & Thursday 9:00–10:30.

Should already know:
   How to design a computer.
   How to design a good computer.

Will learn:
   How to design a better computer.
Prerequisites By Course:

EE 4720, Computer Architecture (Credit or Registration?)

Prerequisites By Topic:

• Logic design.

• Computer organization.

• Assembly-language programming.

• Computer architecture.

• C programming.

Text

“Computer architecture, a quantitative approach,” John L. Hennessy & David A. Patterson, Third Edition. (Recommended but not required, one or two chapters used.)

Technical papers. (Many will be linked to Web site.)
Course Content

- Limits of computer performance.
- Simulation and instrumentation techniques.
- Instruction fetch (front-end) techniques.
- Out-of-order fetch techniques.
- Branch and data prediction.
- Critical-path-friendly implementation techniques.
- Prefetch and advanced caching techniques.
- Symmetric multiprocessing (shared memory computers).
- Simultaneous Multithreading.
- Non-standard control-flow machines.
- And more! (Time permitting.)
Graded Material

Midterm Exam, 35%

Fifty minutes, closed book, open notes and papers.

Final Exam, 35%

Two hours, closed book, open notes and papers.

Homework and Computer Projects, 30%

Lowest grade or unsubmitted assignment dropped.
Computer Projects

Analyze or simulate some architectural feature.

Use real research tools.

Examples:

   Test new branch prediction technique.

   See how useful a new instruction would be.

But won’t that be hard?

   Not that hard.

   Programs for similar problems will be provided.