

Department of Electrical and Computer Engineering  
The University of Texas at Austin

EE 360N, Spring, 2007

Yale Patt, Instructor

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Course Outline

January 17, 2007

January 17: The University decided there would be no class today.

January 22: Lecture 1: Intro to the course. Levels of Transformations. Basic architectural choices. Science of Tradeoffs.

January 24: Lecture 2: Intro to Instruction Set Architecture, with examples taken from many diverse ISAs.  
Detailed discussion of LC-3b, with Assembly language constructs.

Problem set 1a due before class, January 29. (Emphasis: ISA, LC-3b)

January 29: Lecture 3: Translation from Assembly Language to ISA

Problem set 1b due before class, January 31. (Emphasis: The Assembly Process)

January 31: Lecture 4: Intro to Microarchitecture: Detailed discussion of an LC-3b implementation.

Programming Lab 1 is due, Sunday night, February 4, 11:59pm. (Write a program in LC-3b Assembly Language. Write an Assembler. Assemble the program you have written)

February 5: Lecture 5: LC-3b microarchitecture, continued.

February 7: Lecture 6: Physical memory, unaligned access, interleaving, SRAM, DRAM

Programming Lab 2 is due, Sunday night February 11, 11:59pm. (Write a program in C that simulates at the instruction cycle level the baseline LC-3b ISA. Test your simulator with the output of the assembler for the application program written in Programming Lab 1.)

February 12, 14: Extra Discussion Section targeted toward Programming Lab 3.

Problem set 2 due before class, February 19. (Emphasis: Microarchitecture, Physical memory,

February 19: Lecture 9: Virtual memory, page tables, tlb, VAX model, IA32 model, contrast with segmentation.

February 21: Lecture 10: Virtual memory, continued.

Programming Lab 3 is due, Sunday night, February 25, 11:59pm. (Finish the clock cycle level Simulator for the LC-3b. Test it on the application program written in Programming Lab 1.)

February 26: Lecture 11: Cache Memory

February 28: Lecture 12: Interrupts/Exceptions.

Problem set 3 due before class, March 5. (Emphasis: Virtual Memory, Cache Memory)

March 5: Lecture 13: I/O

March 7: Lecture 14: Exam 1.

March 12-17: Spring Break

March 19: Lecture 15: Introduction to Performance Enhancement. Pipelining, Branch Prediction.

March 21: Lecture 16: Performance Enhancement: Vector Processing.

March 26: Lecture 17: Performance Enhancement: Out-of-order execution.

March 26: Last day for an undergraduate to Q drop without petition. Last day to change grading to pass/fail.

March 28: Lecture 18: Integer Arithmetic

Problem set 4 due before class, April 2. (Emphasis: I/E, I/O, Pipelining, Branch Prediction, Vector Processing)

April 2: Lecture 19: Floating Point, and the IEEE Standard.

April 4: Lecture 20: Measurement Methodology.

Programming Lab 4 is due, Sunday night April 8, 11:59pm. (Interrupts/Exceptions)

April 9: Lecture 21: Intro to Multiprocessing, interconnection networks, Amdahl's Law, consistency models (basically everything except cache coherency)

April 11: Lecture 22: Cache Coherency.

Problem set 5 due before class, April 16. (Emphasis: OOO, integer and floating point arithmetic)

April 16: Lecture 23: Review for exam, or catch up!

April 18: Lecture 24: Exam 2

April 23: Lecture 25: Alternative Models of Concurrency: SIMD, MIMD, VLIW, Data Flow, new wrinkles.

April 25: Lecture 26: Alternative Models of Concurrency, Continued.

Programming Lab 5 is due, Sunday night April 29, 11:59pm. (Virtual memory)

April 30: Lecture 27: A case study of the microarchitecture of a state-of-the-art microprocessor.

May 2: Lecture 28: Last class, free for all!

Programming Lab 6 is due, Friday, May 4, 5:00pm. (Pipelining)

Problem set 6. A study guide, not to be turned in.  
(Emphasis: multiprocessing, cache coherency, alt concurrency)

Final exam: Friday, May 11, 7 to 10pm. (TENTATIVE) Note: The Registrar has the right to change the dates of the final exams. Please keep checking the Registrar's web site and our announcements to be sure when/where the final exam will be given.