Department of Electrical and Computer Engineering

The University of Texas at Austin

EE 306, Introduction to Computing
The FIRST Computing Course for EE and CE Majors
Unique Numbers 15680, 15685, 15690, 15695
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Instructor: Derek Chiou
Web: www.ece.utexas.edu/~derek
Office: 540 Engineering Sciences Building (ENS)
Phone: 🇺🇸 ▾ **512-232-7722**
Email: derek@ece.utexas.edu
Office hours: M 5PM to 6PM, T 2PM-3PM in my office (ENS 540), and by appointment

The Syllabus contains a lecture by tentative lecture schedule of topics for the entire semester, the major emphasis of each discussion session, the due dates of problem sets and programming assignments, and the dates of all examinations.

Course Overview: This is the first course in computing for students of computer engineering and electrical engineering. The objective is to provide a strong foundation that a serious student can build on in later courses across the spectrum of computer science and engineering. The idea is that a more complete understanding of the fundamentals will help a student acquire a deeper understanding of more advanced topics, whether that topic is in computer architecture, operating systems, data base, networks, algorithm design, software engineering, or whatever. The approach is "motivated" bottom-up. That is, after providing some overview of why a new concept is important, we attempt to tie that new concept to what the student already understands. Starting with the transistor as a switch, we build logic gates, then more complex logic structures, then gated latches, culminating in an implementation of memory. From there, we study the computer's instruction cycle, and then a particular computer, the LC-3 (for Little Computer 3). We got it wrong the first couple of times! The LC-3 captures the important structures of a modern computer, while keeping it simple enough to allow full understanding. The first programming assignment is in the machine language of the LC-3. From there, we move up to Assembly Language, and learn how an assembler works. The remaining programming assignments are in LC-3 Assembly Language. We cover good programming style and practice, and teach debugging from the get-go. An LC-3 Simulator allows the student to debug his/her own programs. Input (via the keyboard) and output (via the monitor) both

use the physical device registers. System service routines, written in LC-3 Assembly Language, are used to perform I/O functions. They are invoked by user programs by the TRAP instruction and corresponding trap vector. Subroutine calls and returns complete the LC-3 instruction set.

Course Description: The course will cover the material of Chapters 1 through 10 of the textbook. A detailed outline of the contents is contained in the textbook's Table of Contents.

Meeting Info: The course consists of two and a half hours of lecture + a one hour discussion session each week. Lectures will be in CPE 2.208, MW 3:30p - 5:00p. Discussion sessions will be held from 10AM-11AM, 11AM-12PM, 12PM-1PM, 1PM-2PM Fridays, all in ENS 126. The Course Schedule lists the meeting times and room numbers for each of the discussion sessions. Note that each discussion session has its own unique id. Students are free to attend the discussion session of their choice, although I would like you to attend your assigned discussion session on January 23.

Teaching Assistants: Pratyusha Nidamaluri and Zrinka Puljiz

Course Home Page: Blackboard

Textbook: *Introduction to Computing Systems: from bits and gates to C and beyond*; Yale N. Patt and Sanjay J. Patel; Mc-Graw Hill, 2004, 2nd edition. You will need the 2nd edition. There have been many substantial changes since the first edition. The ISBN for the 2nd edition is: 0-07-246750-9

Additional Course Resources: Class handouts will be supplied when necessary to supplement the concepts discussed in lecture. Other information will be downloadable from the course homepage.

Prerequisites: There are no formal pre-requisites. No programming experience is assumed. On the other hand, we do assume that the student is able and highly motivated to learn and has the energy to support that motivation. We also assume that your mathematics background is at least at the level where you are enrolled in the serious calculus sequence. EE 306 is intended for freshmen, but is open to all students who want a serious introduction to computing in general and computer engineering in particular.

Homework Policy: Problem sets will be assigned periodically. Usually, students will have between one and two weeks to complete them. Students will be encouraged to form study groups to work homework problems. Only one copy of a problem set per group need be turned in. There will be five programming assignments, one in machine language, four in assembly language. Dates and times when problem sets and programming assignments are due are contained in the Syllabus. Students are encouraged to discuss the structure of the program with other members of their

group. However, the detailed algorithm and actual coding must be done by the student working alone. Collaboration on the algorithm and/or giving or accepting actual code for a program constitutes cheating, and will be dealt with harshly. The programs you write and the examinations you take MUST be your own work. Providing information to another student where prohibited, or obtaining information from another student where prohibited is considered cheating. This includes the exchange of any information during an examination and any code that is part of a solution to a programming assignment. Allowing another student to read something on your paper during an examination is considered cheating. In fact, leaving information unprotected so it can be compromised by another student is considered cheating. This includes sheets of paper lying about in your home, and computer files that are not properly protected. If you cheat, you violate the soul of the University, which we take very seriously, and will deal with it harshly. Our standard penalty is a letter to the Dean (in the form of a cheating form), a drop of one letter grade for your final grade, and a 0 on the thing you cheated on. It is NOT worth it to cheat. If you have any question as to what is permitted and what is not, ask the instructor or a TA FIRST. If you don't ask first, and you do something that is not allowed, the response "I thought it was okay" is not an acceptable justification. I am embarrassed to have to bother all of you with this paragraph since, for most of you, this paragraph is totally unnecessary.

Quiz and Exam Policy: There will be two in-class exams. There will be a final exam during the normal final exam period that is scheduled by the registrar. All exams will be closed book, with two exceptions: (1) The student may bring into the exam three sheets of paper on which the student is free to write anything he/she wishes. All three sheets must be original sheets in the student's own handwriting and will be handed in with the exam. (2) The student may bring into the exam any handouts that have been expressly permitted by the instructor prior to the exam. The student may not have in his possession during any exam a calculator, a mobile phone, or any other mechanism that in the view of the instructor can distract from a fair and balanced examination.

Final Exam: See above.

Grading Mechanics: Course Grade:
Problem sets (2% each, times 5 assignments = 10%)
Programming Assignments (5% each, times 5 assignments = 25%)
Two in-class exams (17% each = 34%)
Final exam (25%)
Other (6%)

Policy: Problem sets and programming assignments are due on the date and at the time specified. Make-up exams will not be given, except under very rare circumstances. Excused absence from an in-class exam must be obtained in advance, except in very rare circumstances.

The MEC Common Evaluation form will be used to evaluate the instructor in this course.

Additional details:

Allegations of Scholastic Dishonesty will be dealt with according to the procedures outlined in Appendix C, Chapter 11, of the General Information Bulletin, http://www.utexas.edu/student/registrar/catalogs/.

The University of Texas at Austin provides, upon request, appropriate academic adjustments for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4241 TDD, or the College of Engineering Director of Students with Disabilities, 471-4321.