EE1301 – Introduction to Computing Systems

Updated: Feb.5 2013

This course outline is to serve as a reference for instructors and students. It gives a general overview of course content and ABET Outcomes. Please consult the semester specific syllabus produced by the course instructor for more detailed information.

Course Prerequisites, Basic Content, and Outcomes

Catalog Description
(4.0 cr; Prereq-&MATH 1271 or &MATH 1371; fall, spring, every year) Fundamental concepts of computing systems, from machine level to high-level programming. Transistors, logic circuits. Instruction set architecture. Memory, pointer addressing. Binary arithmetic, data representation. Data types/structures. Assembly language, C programming. Control flow, iteration, recursion. Integral lab.

Contact Hours: Three hours of lecture and two hours of lab per week.

Text: *Introduction to Computing Systems* Second Edition, Patt and Patel, McGraw-Hill

Prerequisites by Topic: This course is introductory and assumes no prior knowledge of computing principles or programming.

Course Outcomes:

1)An understanding of the fundamental concepts of computing systems, from the machine level to high level language programming.
2)Transistor and logic circuits,
3)Memory and pointer addressing,
4)Binary arithmetic and data representation,
5)Data types and structures.
6)Assembly language and C programming.

Relationship to Student Outcomes: In accordance with ABET accreditation criteria, all engineering programs must demonstrate that their students achieve certain outcomes. This list of outcomes may be found on the ABET.org website. Of the outcomes listed in the ABET criteria (enumerated as (a) through (k)), this course teaches skills which help the student achieve the following outcomes:

(a) an ability to apply knowledge of mathematics, science, and engineering
(e) an ability to identify, formulate, and solve engineering problems
(i) a recognition of the need for, and an ability to engage in life-long learning
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Outline

Week	Lecture Topics
1	Intro to switches and lights, transistors, and LEDs/Binary representation of data
2	Digital Logic
3	Sequential Logic/Finite State Machines
4-5	Design of a simple CPU and computer operation/Instruction sets
6-7	Intro to assembly language/Machine language/programs/programming
8	Intro to higher level languages and compilers
	C Programming:
9-10	Basic operations, syntax, data taypes
11	The C Library
12	Pointers, structures, dynamic memory allocation, recursion
13	File I/O
14	Advanced programming
15	Review and projects

Departmental and University Policies

Student Academic Integrity and Scholastic Dishonesty: Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own, can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

***Scholastic Dishonesty*:** Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering forging , or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.

Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, ask.

Incompletes: A grade of I for Incomplete is given at the discretion of the course instructor when, due to extraordinary circumstances, the student who has successfully completed a substantial portion of the course's work with a passing grade was prevented from completing the work of the course on time. Students must fill out an Incomplete Grade Agreement form found in Keller 3-166. The maximum time to remove and replace an incomplete grade is one year.

Makeup Work for Legimate Absensces: Consult university policy here:
http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html

Personal Electronic Devices: Consult university policy here:
http://policy.umn.edu/Policies/Education/Education/CLASSROOMPED.html

Mental Health: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website at http://www.mentalhealth.umn.edu