CS330—Microcomputer Architecture

Fall 2003–2004

Description: This class is an introduction to the hardware and low-level software of microcomputers, and their interaction, with simple applications. There is both a lecture and a laboratory component. The topics have been selected to give you a base from which to pursue further aspects of hardware and software application.

Basic principles we will study include: binary numbers, arithmetic and information coding; Boolean algebra; digital logic circuits; machine and assembly language programming; and interfacing hardware and software. (A detailed course outline will follow.)

Beginning with number systems suitable to digital logic, basic logic gates and circuits will be introduced. Then using the basic circuits as building blocks, register circuits and memory devices are introduced. Then the synchronized operation of these devices on a "bus" is used to illustrate the basic microcomputer architecture. Then in the second half of the course, the programmed operation of the microcomputer is studied using assembly language. The course concludes with an introduction to interfacing hardware and software.

Prerequisites:	An introductory lab course in natural science or computer programming.
Textbook:	Malvino and Brown, "Digital Computer Electronics" (hardware topics); Handout material (software topics).
Meetings:	Lec MWF 2–3, WS-2602; Lab T 12–3, WS-2508
Instructor:	Dr. Mark W. Jacobs (mjacobs@nmu.edu)
Office:	WS-2509, 227-2557 or 227-2450
Hours:	Open. You can call to see if I'm there, first.

Requirements: There will be a weekly quiz in lecture, two exams (midterm and final), and weekly lab exercises. Quizzes will normally be on Fridays, and cover the material since the last quiz, as an inducement to keep up. Lab exercises should be written up and handed in before you leave. You may work in groups, but you must hand in your own report.

Note: if you cannot be present for a quiz, exam, or lab exercise, you must make arrangements beforehand; except in extreme cases, missed assignments cannot be made up. Legitimate excuses include participation in university-sanctioned athletic events, etc. (Please do not ask to reschedule on the basis of an early vacation departure, etc.)

Grading: The scale for letter grades is not pre-determined, but should be close to the usual 90-A, 80-B,... one. The components are weighted as follows; the date of the midterm may be adjusted to coordinate with lecture topics.

Quizzes:	30%	(Fridays, usually)
Midterm:	25%	(Fri, Oct 17)
Final:	25%	(Wed, Dec 10, 2–4pm)
Labs:	20%	

ADA statement: "If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office, located in Room 1104 of the University Center (voice: 227-1700, tty: 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines."