Microcontroller Systems

ELET 3232
Class Introduction
Basic Class Outline

- AVR Microcontrollers:
  - ATmega
  - ATtiny
  - ATxmega
  - AVR32

- C Programming and Linking to Assembly Language

- Development Software and Simulation
Pololu Robotics & Electronics

Robot Kits
Line followers
Robot arms
Chassis

3pi Robot
$99.95

High-performance, C-programmable, ATmega328P-based robot (with Arduino support)

Items #975, #1306
AVR Book


A good book for learning AVR C language (the one we’ll probably use the most)

A good book for learning AVR C language
(not required, but very useful)

A good book for learning Embedded System Design (not required, but highly recommended)
Morton, John, 2002, AVR: An Introductory Course, Newnes

A good book for learning AVR assembly language (not required, but very useful)
Contact Information

Stephen J. Kuyath, Ph.D.
Associate Professor, Electrical Engineering Technology
336 Smith
sjkuyath@uncc.edu (preferred)
704.687.4799
The goal of this course is for students to be able to design, test, troubleshoot, and implement assembly language and C language programs for contemporary microcontrollers as well as design, test, troubleshoot, and interface various hardware devices and system components.
Homework and Projects

- Several homework assignments and projects will be assigned throughout the semester.
- The instructor may assign some individual assignments, but for most homework assignments and projects, students are encouraged to work together.
  - However, each student is responsible for understanding the course materials as well as submitting individual work.
- Late submissions for homework and projects will not be accepted.
Examinations

- A midterm exam will be given near the middle of the semester.
- A final exam will be given during final exam week.
- If for any reason a student is unable to attend an exam, arrangements with the instructor must be made prior to the test.
- If prior arrangement is not made, the student will receive a grade of zero for the exam.
Grading

Homework 10%
Projects 40%
Midterm Exam 25%
Final Exam 25%

90 – 100 A
80 – 89 B
70 – 79 C
60 – 69 D
Academic Integrity

- All students are required to know, observe and enforce the guidelines set forth by the UNC Charlotte Code of Student Academic Integrity, which may be found the web at http://www.legal.uncc.edu/policies/ps-105.html.

- It should be noted that this Code may be modified and that students are encouraged to contact the Office of the Dean of Students to ensure they consult the most recent version.
Academic Integrity

This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Students should pay particular attention to the standards involving Complicity and Plagiarism. A complete definition of all terms and a delineation of procedures to be followed for alleged violations may be found in the complete text of the Code at the website referenced on the previous page.
Furber, Steve, 2000, ARM System-on-Chip Architecture, 2nd Ed. Addison-Wesley

I will use information for the ARM from this book (not required, but very useful)
ARM Book(s)


A very technical reference manual for ARMs (not required, but very useful)
ARM Book(s)


Another reference book for ARMs (not required, but very useful)