1. GENERAL INFORMATION

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Office hours: Monday 1:00PM – 2:00PM
Tuesday 4:00PM – 5:00PM
Thursday 4:00PM – 5:00PM
or by appointment

Class time and place: Tuesday and Thursday
5:00PM – 6:15PM
REH111

Textbook: Embedded Microcomputer Systems - Real Time Interfacing,
by Jonathan W. Valvano - University of Texas, Austin
ISBN: 0534366422

Pre-requisites: 45308 – Microprocessor Laboratory
40302 – Electronics 2

2. COURSE OBJECTIVES

(i) To acquire the fundamentals of an embedded system.

(ii) To understand advanced architecture associated with an industry standard
microcontroller. The students will better understand timing diagrams as well as
memory and I/O device interfacing to the address/data bus.

(iii) To gain advanced software experience using C programming (and cross-
compilers). The student will be able to debug real-time embedded systems as
well as work with interrupts and real-time events.

(iv) To gain experience with a simulation tool. This tool allows the user to explore
the inner workings of the microcontroller as well as design, test, and debug
applications by connecting virtual peripheral devices to the microcontroller. These devices include hardware as well as instrumentation.

(v) To design and implement a team-based, embedded system project. This project requires a formal write-up and oral presentation that will help the student gain written and oral communication experience.

3. COURSE CONTENTS

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4. GRADING POLICY

4.1. Grade Distribution

- Exam 1 20%
- Exam 2 20%
- Final Exam 20%
- Project 20%
- Homework 20%

4.2. Project Rules and General Comments:

- You will be required to work in groups of two.
- You will be required to keep a project notebook (it must be kept up to date and will be graded at my discretion).
• You will be required to supply a time-line for your project.
• You will be required to do research and readings (journal articles)
  pertaining to the project and include these findings in your final report.
• There will be a final oral presentation of the project.
• There will be a final written formal paper on the project.
• Your project should try to address as many of the following engineering
  constraints as possible: 1) economic, 2) environmental, 3) sustainable, 4)
  manufacturability, 5) ethical, 6) health and safety, 7) social and political.

5. RELATIONSHIP BETWEEN COURSE OBJECTIVES AND PROGRAM’S
OBJECTIVES

5.1. Program’s Educational Objectives:

I) Fundamental Knowledge: The Electrical and Computer Engineering Programs will
provide students with fundamental knowledge of mathematics, Sciences and
engineering, in order for them to apply this knowledge to the solution of electrical
engineering problems.

II) Design and Practical Skills: The Electrical and Computer Engineering Programs
will enable students to perform engineering design subject to engineering standards
and constrains. In addition, the program will provide students with hands-on
experience for implementing such designs.

III) Social and Professional Aptitude: The Electrical and Computer Engineering
Programs will provide a broad-based education which instill in our diverse student
body professional and ethical conduct, communication and teamwork skills, and the
desire for life-long learning to interact effectively with the members of engineering
profession as well as society at large.

5.2. Link between Course Objectives and Program Objectives

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