

COURSE SYLLABUS

Course Number: ELC 141.2 Title: Microprocessor Systems Lab

Department/Program: ECCE School: SOSE

Semester: 1st School Year: SY13-14 Instructor: Carlos M. Oppus

A. COURSE DESCRIPTION

This course is designed to equip the students with the fundamental concepts of Microprocessor systems. It focuses on practical exercises with emphasis on Embedded System Design, Microprocessor Programming, Interfacing, and Controller Design. These laboratory exercises on Embedded Systems, Microprocessor Organization and Programming. Microprocessor Architecture, System Components, Interfacing Techniques and Interfacing Standards are complemented by the lecture part (Elc 141.1).

B. COURSE OBJECTIVES

To have a hands-on understanding of the fundamental concepts of Embedded Systems. To learn assembly and machine code programming. To be able to design systems using microprocessors/microcontrollers.

C. COURSE OUTLINE

1. Introduction to Microprocessor system
2. Introduction to Assembly Language Programming
3. Basics of Micro-controllers – PIC example
4. More on Micro-controllers – Arduino example
5. Embedded System application – the Mobile Robot

D. TIMEFRAME

Due	Lab Activity	Due
Presentation	N/A	Report
	Lab0: Introduction	
	Lab 1: Mobot 1	
	<u>Lab 2: Mobot 2</u>	
	Lab 3: PIC 1	
	<u>Lab 4: PIC 2</u>	
	<u>Lab 5: Arduino</u>	
	<u>Lab 6: Arduino</u>	
	Lab 7: Arduino	
	Lab 8: Arduino	
Project ☺		

E. REQUIRED READING

PIC CPU Datasheet
Arduino Documentation
Mobot Documentation

F. SUGGESTED READINGS

Heffer, D.E., King, G.A. & Keith, D.C., **Basic Principles and Practice of Microprocessors.**
Protopapas, D.A., **Microcomputer Hardware Design.**
Arduino.cc

G. COURSE REQUIREMENTS

Completion of all laboratory exercises.

H. GRADING SYSTEM

A	92+	B+	87-91+	F	below 59+
B	81-85+	C+	76-80+		
C	70-75+	D	60-69+		

I. CLASSROOM POLICIES

- Each exercise is graded on a **100**-point basis. The score will be based on the lab performance (60%) and the quality of the written report (40%). All exercises must be defended orally. Orals are on an individual basis. The project is worth 200 points.
- In the performance of an experiment, all necessary data/diagram/listing must be copied on a bond paper. This is to be signed by the teacher at the end of the lab period. This signed paper must be included in the submission of the lab report. A deduction of 5 points per day for late presentation will be enforced.
- A lab report is null and void if submitted without a data sheet signed by the instructor. A deduction of 5 points per day for late reports will be enforced. If the instructor is not around kindly submit the report to the ECCE secretary.
- Lab reports must be type-written or printed and must follow the lab report format.
- Cleanliness and order must be kept in the lab. Things to do before leaving the lab: store all equipment properly, clean your table of visible debris, arrange the chairs. You are responsible for your own work area.

Lab Report Format

- ✓ Name of group member/s, Date
- ✓ Exercise #, Title and abstract
- ✓ Flow chart (if applicable)
- ✓ Program listing
- ✓ Computations (if applicable)
- ✓ Schematic diagram (if applicable)
- ✓ Design Process and Discussion

You are expected to prepare the background theory for the experiment to be performed. Describe/discuss the design process.

✓ Conclusion and Recommendation

From the theoretical information, you should be able to interpret the result of the experiment.

Mailing List

A mailing list (or e-group) shall be established for the course. Various materials may be distributed thru the mailing list. While membership in the mailing list is not a requirement of the course, students who do not join the mailing list are responsible for material(s) distributed thru the mailing list.

J. CONSULTATION HOURS

TW 10:30 to 12:30

MThF by appointment or via text or email

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