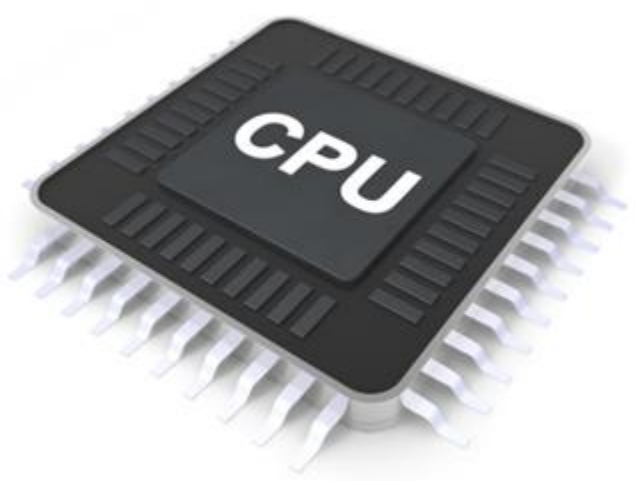

ENEE 3582 - Microprocessors

Syllabus and Course Introduction

Instructor & Course Info

- INSTRUCTOR: Dr. A. Alsamman
  - Office: EN 842, Phone: 280-7161
  - Email: aalsamma@uno.edu
- Office Hrs: TBA
- COURSE INFO
  - ENEE 3582, Digital Design using Microprocessors, Credit: 3 Hr.
  - T/Th: 11am – 12:15pm
  - Location: SC 2120
- PREREQUISISTES
  - ENEE 2582, ENEE 2586.
  - Concurrent registration in ENEE 3512.

Text, Goals, ABET Outcomes

- Zoom: https://uno.zoom.us/j/6758927200
  - No password to live session
  - Passcode for the recorded video: q~123456
- TEXTBOOKS
  - AVR Data sheets
- GOALS
  - Knowledge of microcomputer architecture, hardware and interfacing.
  - Ability to control the microprocessors, hardware and interfaces using Assembly programming.
- ABET Outcomes

  (b) an ability to design and conduct experiments, as well as to analyze and interpret data

  (b1) an ability to design experiments

  (n) knowledge of advanced mathematics

  (n4) knowledge of discrete mathematics

Schedule

	TOPICS	Week
1.	Review of Number System	1
2.	Introduction to Microprocessors	1
3.	Assembly Language Fundamentals	2
4.	Data Transfer Instructions	2
5.	Arithmetic and Logic Instructions	3
6.	ALU Flags	4
7.	Loops and Branches	5
8.	Stack	6
9.	Procedures	7
10.	Macros	8
11.	Interrupts	9
12.	Hardware IO	10-12
13.	Floating Point Unit	13-14

Testing, Assignments

- TESTING
  - 2 tests and one final test will be scheduled.
  - Tests will take 1 class duration. Dates will be confirmed in advance.
  - Because of the nature of this course, tests will be comprehensive but will focus on more recent material not covered in the previous tests.
- ASSIGNMENTS
  - Homework will be graded primarily on effort.
  - Students should form groups of no more than 4.
  - Submission will be online. Submit 1 file per group.
  - Generally, homework will be assigned weekly and will be due the following **Tuesday** unless otherwise stated.
  - The student will be responsible for reading the assignment on Moodle.

Grading, Attendance, Dates

- GRADING POLICY
  - Homework 20%
  - 2 Tests 55%
  - Final 25%
- ATTENDANCE
  - Attendance will not be taken in class.
  - Attendance of tests is mandatory.
  - Students are responsible for material covered in class as well as assignment due dates and test dates.
- IMPORTANT DATES

  https://www.uno.edu/registrar/bulletin/important-dates#spring

  Final T 5/16, 10am-12pm

Makeup, Academic Dishonesty

- MAKEUP POLICY

  No makeup will be given for missed homework or examinations without valid and/or written excuse. The instructor will make decisions regarding the makeup. Students are expected to report scheduling conflicts ahead of time.

- ACADEMIC DISHONESTY

  Academic integrity is fundamental to the process of learning and evaluation of academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes but is not limited to: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being accessory to acts of academic dishonesty. Any such behavior will be reported and dealt with in accordance to the UNO Judicial Code (see Student Handbook).

Students with Disabilities, Changes in Course

- STUDENTS WITH DISABILITIES

  It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.

- CHANGES IN COURSE REQUIREMENTS

  Since all classes do not progress at the same rate, the instructor may wish to modify the above mentioned requirements or their timing as circumstances dictate. For example, the instructor may wish to change test dates and material, the number and frequency of examinations, or the number and sequence of assignments. If such modification is needed, the student will be given adequate notification.

Feedback from Previous Semesters

- INSTRUCTOR:
  - Attentive to questions
  - Stimulates questions/discussion
  - Busy but accessible
- TEXTBOOK & NOTES:
  - Text good as a reference.
  - Notes are good.
  - Good balance between slides and blackboard.
- TESTS:
  - Difficult
  - A lot of material
  - Graded fairly
- HOMEWORK:
  - Sometimes time consuming
  - Graded very fairly.
  - Did not resemble test questions
- LABS:
  - Easy at beginning, time consuming at the end
  - Grading fair

Discussion: Why Use Microp?

- Design Problem:

  Design a security system. Use your current electrical and computer skills to describe how would you implement each of the following features:
  - If the system is armed and the door is open alarm will sound.
  - Uses a code to arm and disarm.
  - Stores codes for different users.
  - Logs time when a code is used.
  - Contacts police when alarm is on for some time.
  - Can be remotely controlled.

Discussion: Microp Apps

- Microp Selection:
  - Intel, Motorola, AMD, …, etc.
- Programming:
  - Low level (Assembly)
  - high level (e.g. C)
- Microp Design:
  - General purpose, e.g. computers
  - Embedded:
    - Multifunctional boards
    - Application specific design

- Hardware Application:
  - Computer Control
  - Computer device management
  - Computer Interfacing
  - Embedded for electronic devices
  - Embedded for electro-mechanical devices
- Software Application:
  - OS interface.
  - OS programming, e.g. DOS programming, windows 32 bit programming
  - Virtual machines.