

COURSE OF STUDY
EET 254: MACHINE LANGUAGE FOR MICRO CONTROLLERS (20087)
Fall 2006

Tuesday & Thursday 2:00-3:55 pm, Whalin 306 (Lecture) & Whalin 403 (Laboratory)

Instructor:	Dr. Ray Richardson
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Office hours:	To Be Announced.

I. COURSE DESCRIPTION:

Machine language programming for ROM based 8 and 16 bit microprocessors. Emphasis will be on software manipulation of I/O control devices in real time interrupt driven process control environments.

II. CREDIT HOURS: Three (3) semester hours.

III. PREREQUISITE: EET 252.

IV. TEXTBOOK:

Miller, G. H. (2004). Microcomputer engineering (3rd ed.). New Jersey: Prentice Hall.
Or Miller, G. H. (1999). Microcomputer engineering (2nd ed.). New Jersey: Prentice Hall.

Additional Materials will be provided through handouts and other reference materials.

V. COURSE OBJECTIVES:

Upon completion of EET 254, students should be able to:

- List and define the use of the fundamental structure of a microcontroller
- List and define the fundamental registers found in a microprocessor.
- Explain operations for the following instructions' groups: data movement, arithmetic/logic, and conditional/unconditional branching, miscellaneous.
- List and describe commonly used addressing modes.
- Define a problem and list the steps needed to solve it.
- Write machine language programs that utilize different instruction groups and addressing modes.
- Read and understand the specifications for programmable I/O ports.
- Construct circuitry capable of interface with the microcontroller
- Write and debug software programs for the microcontroller.

VI. COURSE OUTLINE:

1. Number systems and codes
2. A microcomputer block diagram
3. The accumulator and program counter
4. A machine language debugger
5. Addressing modes
6. Data move instructions
7. Math and logic instructions
8. Programmable parallel I/O devices
9. Decision making instructions and loops
10. Exception processing
11. High and low level languages
12. The basic components of programming
13. I/O Capabilities
14. Conditioning circuits

VII. COURSE REQUIREMENTS:

Students are expected to:

- Attend each lecture and laboratory session.
- Complete all reading and laboratory assignments on time.
- Take all tests.

VIII. EVALUATION:

Students will be evaluated as follows:

Two exams	2 @ 100pts ea	200
Annotated Bibliographies	6 @ 10 pts ea	60
Quizzes & Homework (unannounced)		100
Final Exam (Comprehensive)		150
Lab Assignments	10 @ 20 pts ea	200
Professional Development		40

Total:		720

Exams

Tests questions may be taken from any material covered in class, from reading assignments, and from laboratory assignments

Annotated Bibliographies

One-page annotated bibliographies are to reflect changes and current topics relevant to the field of microcontrollers. Reports must be from credible, professional publications from the last two years.

Quizzes & Homework

There can be quizzes given at any point during the class, and homework as assigned.

Laboratory Assignments

There will be approximately 10 laboratory assignments. Late assignments will be penalized heavily, 10% of the grade for each day (MTWRF) it is late.

Professional Development

The development grade is tied to the overall professional manner in which the students conduct themselves during the course. Evaluation in this area includes attendance, cleanliness of work, professional design of projects, etc.

IX. GRADES:

100%-90%	= A
89.9%-80%	= B
79.9%-70%	= C
69.9%-60%	= D
59.9%-0%	= F

Mid-term grades would be available through Banner for the students who wish to know their grades from the class for the first half of the semester.

X. POLICY ON LATE ASSIGNMENTS:

In the “real world” late work will cost you wages and perhaps your job. In this class, any assignment turned in late (without prior arrangements) will result in a lower grade, Ten Percent (10%) per school day. NOTE: Monday, Tuesday, Wednesday, Thursday, and Friday are all school days.

XI. ACADEMIC HONESTY

Cheating will not be tolerated and will be dealt with decisively.

XII. ATTENDANCE POLICY:

- This class has a significant laboratory requirement. Regular attendance of this class is necessary to receive a passing grade.
- Should you need to miss a class due to an excused absence, please let me know as far in advance as possible, in writing, of your absence. All materials due during the excused absence should be submitted before the absence to avoid late penalties. All assignments turned in late due to any unexcused absence will be penalized heavily.
- If a student misses a class, it is their responsibility to obtain all notes and missed assignments from their fellow students.
- There will be no make-up exams or quizzes for students with unexcused absences.
- After the second unexcused absence, each unexcused absence will cause one percent deduction from the "Professional Development" evaluation.
- Five (5), or more unexcused absences, may result in one letter grade lower.
- Your grade will be an automatic F if you have more than Ten (10) unexcused absences.
- Late arriving to the class and leaving early results in a student missing important information as well as causing disruption to other class members. Therefore, frequent late arrivals or leaving early may be treated as unexcused absences when determining final course grades.

XIII. ADA

The American with Disabilities Act of 1990 (ADA) provides protection from illegal discrimination for qualified individuals with disabilities. Students requesting instructional accommodations due to disabilities may arrange for such accommodations through the Office of Services for Individuals with Disabilities.

If you are registered with the Office of Services for Individuals with Disabilities please make an appointment with the course instructor to discuss any academic accommodations you need. If you need accommodations and are not registered with the Office of Services for Individuals with Disabilities, please contact the office directly either in person, on the first floor of the Turley House, or by telephone at (859) 622-1500 V/TTY. Upon individual request this syllabus can be made available in alternate forms.

IV. HARDWARE LIST

You will need some of the hardware components from the prerequisite (EET 252, Digital Electronics) course.