

1. Course Title:

Microprocessors
EET 375 – 4 Credits

EET Program Requirement offered each fall

Prerequisite: EET 372

This is a Technical content course under ABET Criterion 5

2. Faculty Member Information:

Instructor:

Office: Hebelers 101a

Phone: 509-963-2289

E-mail: holdenl@cwu.edu

3. Course Description:

Study of microprocessor system components, functions, and programming methods in assembly language. Laboratories examine microprocessor system operation, configuration and programming.

4. Textbook and other required materials for the course:

MPASM/MPLINK User's Guide

MPLAB IDE User's Guide

MPLAB ICD 2 In-Circuit Debugger User's Guide

PIC16F91X 29/4/44-Pin Datasheet

PICDEM Mechatronics Demonstration Board User's Guide

5. Specific Learner and Expressive Outcomes and Assessment Strategies:

| ABET Outcome Criteria # | Learner Outcomes | Assessment |
|-------------------------|--|--|
| 1 | 1. The student will use assembly language to configure, read from, and write to parallel ports. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |
| 2 - 9.A.3. | 2. The student will use assembly language to manipulate data for use by the machine or by a user. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |
| 3 - 9.A.7. | 3. The student will use assembly language to configure and use an analog-to-digital (A/D) converter. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |
| 4 | 4. The student will use assembly language to configure and use a serial port. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |

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| 5 | 5. The student will be able to write interrupt service routines to respond to a system input. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |
| 6 | 6. The student will be able to use specification sheets to determine the how to configure and program microcontrollers and their associated ports. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |
| 7 | 7. The student will communicate their development process, work, assumptions, and evaluations to their peers and the professor. | The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work. |

6. Course Topics and Schedule:

- Programming Environment 2 Hours
- Using Specification Sheets 2 Hours
- Assembly Language Programming 10 Hours
- Microprocessor organization 4 Hours
- Parallel Ports 4 Hours
- Analog-to-Digital Converters 4 Hours
- Serial Ports 4 Hours
- Interrupt Service Routines (ISR) 4 Hours
- Basic Pulse Width Modulation (PWM) for DC motors 4 Hours
- Compiling and Communicating Technical Information 2 Hours

7. Grading:

| Grade | % | Grade | % | Grade | % | Grade | % | Grade | % |
|-------|----------|-------|---------|-------|---------|-------|---------|-------|------|
| | | B+ | 87 - 90 | C+ | 77 - 80 | D+ | 67 - 70 | F | < 60 |
| A | 94 - 100 | B | 83 - 87 | C | 73 - 77 | D | 63 - 67 | | |
| A- | 90 - 94 | B- | 80 - 83 | C- | 70 - 73 | D- | 60 - 63 | | |

Grading Percentages

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|--------------------|-----|
| Test Scores | 40% |
| Laboratory Reports | 40% |
| Lab Book | 10% |
| Participation | 10% |

8. ADA Statement:

Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact me or Robert Harden, ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.