

1. Course Title:

**Microprocessors and Instrumentation
EET 376 – 4 Credits**

EET Program Requirement offered each winter

Prerequisite: EET 375

This is a Technical content course under ABET Criterion 5

2. Faculty Member Information:

Instructor:

Office: Hebel 101a

Phone: 509-963-2289

E-mail: holdenl@cwu.edu

3. Course Description:

Study of microprocessor system configuration, design, and sensor integration programming applications. Laboratories examine application design using various sensor input and system output methods.

4. Textbook and other required materials for the course:

16 Bit Programmers Reference Manual Microchip Document-DS70157B

Microchip 24F128GA010 Data Sheet-39747C

Explorer 16 User’s Guide-51589a

PIC24F Family Reference Manual

MPLAB C30 User Guide-51284F

MPLAB C30 Managed PSV Ptrs

16 Bit Language Tools Getting Started-70094d

16 Bit Language Tools Libraries-51456d

5. Specific Learner and Expressive Outcomes and Assessment Strategies:

ABET	Learner Outcomes	Assessment
9.A.3.	1. The student will be able to use 'C' to configure, read from, and write to peripheral ports.	The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work.
3.c.	2. The student will be able to use 'C' to manipulate data for use by the machine or by a user and optimize the process.	The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work.
9.A.2.	3. The student will be able to read data into the microprocessor from external sensors.	The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work.
9.a.2.	4. The student will be able to configure and use a serial port to communicate information.	The student will complete homework assignments, a written test, laboratory work, and write reports on laboratory work.
3.f.	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.
9.A.7.	6. The student will be able to use specification sheets to determine how to configure and program	The student will complete homework assignments, a written test, laboratory work,

	microcontrollers and their associated ports.	and write reports on laboratory work.
3.g.	7. The student will communicate their development process, work, assumptions, and evaluations to their peers and the professor.	The student will write and present reports on, and keep a log of laboratory and investigation experiences.
3.e.	8. The student will be able to work as a member of a team where different team members are responsible for writing separate modules of a program.	The student will complete a written test, laboratory work, and write reports on laboratory work.

6. Course Topics and Schedule:

- C Programming Environment 2 Hours
- Using Specification Sheets 2 Hours
- 16 bit C/Assembly Language Programming 10 Hours
- 16 bit Microprocessor organization 4 Hours
- Parallel Ports 4 Hours
- Timers 4 Hours
- Analog-to-Digital Converters 4 Hours
- Serial Ports 4 Hours
- Interrupt Service Routines (ISR) 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

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.