



Purpose: It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

Course Title - Microprocessor

Course Prefix and Number - CETT 1445

Department – Electronics Eng. Tech.

Division - Technology and Business

Course Type: (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y or N)

Semester Credit Hours # : Lecture hours # : Lab/Other Hours # **4:3:3**

Equated Pay hours for course – 4.5

Course Catalog Description - An introductory course in microprocessor software and hardware; its architecture, timing sequence, operation, and programming. Discussion of appropriate software diagnostic language and tools. Organization, construction, and application of stored program LSI computers, both hardware and software. Microprocessor architecture: processor, memory, and I/O. The bus concept, RAM, and ROM. Instruction sets for processors. Programming and I/O for open- and closed-loop control. Laboratory application of concepts using systems with extensive troubleshooting experience.

List Lab/ Other Hours
Lab Hours 3
Clinical Hours
Practicum Hours
Other (list)

Prerequisites/Co Requisites - Credit for CETT 1449

Prepared by David Kucera

Date 06/20/13

Reviewed by Department Head David Kucera

Date 06/10/13

Accuracy verified by Division Chair David Kucera

Date 06/10/13

Approved by Dean or Vice President of Instruction Amy LaPan

Date 1/30/2014

I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non-lecture instruction):

The following performance will be expected of any student completing this course with a passing grade. There is no absolute time limit on the performance of these objectives, unless noted, but the grade received by the student will depend, in part, on the relative speed and precision of the student's performance in these tasks. Where subjective evaluations are indicated, the instructor will make these judgments based on his or her knowledge of the skills required to place a graduate with the expectation of successful on-job performance.

The student will be expected to perform the following tasks in written examination or laboratory demonstration:

Hardware

- Computer Systems
- The bus concept
- Input techniques
- Output techniques
- Memory
- Memory Hierarchy
- Primary Memory – RAM/ROM
- Secondary Memory
- CPU-Introduction to processing action

Basic Processing

- Programming
- Assembly languages
- Timing and Multiplexing

Software

- Data transfer
- Arithmetic group
- Logical group
- Loops and Jumps
- Interrupts

Interfacing

- Mathematical refinement
- Basic I/O Interfacing
- Programming Peripherals
- Controllers
- Data Communication: Serial I/O

Arduino Microcontroller

- Architecture
- Instruction set
- Interrupts
- Input/Output

II. Course Learning Outcomes

Course Learning Outcome	Methods of Assessment
<p>Upon successful completion of this course, students will:</p> <ul style="list-style-type: none"> • 1. Define terms applicable to microprocessor/microcomputer systems • 2. Program applications for microprocessor/microcomputer systems • 3. Write a program using Assembly Level Language • 4. Describe the purpose of microprocessor internal registers. 	<p>Outcomes 1,2,3,4 will be assessed by:</p> <ul style="list-style-type: none"> • Exams • Homework • Labs • Quizzes • Reassessed in Capstone Experience: CETT 2349 Final Project course

III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

No text required. Instructor handouts
 Calculator – scientific with Sine, Cosine, Tangent capabilities
 Arduino or similar Micro Controller

IV. Suggested Course Maximum - 30 lecture, 15 laboratory

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Lecture facilities for 30 students. Laboratory facilities for 18 students must include 9 bench positions each with a digital meter, logic probe, 20 MHz oscilloscope and probes, bread boarding facility with power supply and signal generator, and a stock of basic AC circuit components.

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

Evaluation of Performance:

Course grades will be determined by the percentage of course objectives for which the student can demonstrate mastery and by attendance as stated in the Departmental Policy sheet provided to the student. Mastery of course objectives will be determined by written examinations, an attendance grade as described in the Departmental Policy handout, a daily work grade which will include graded homework, graded laboratory work, and a comprehensive final exam.

Approximate Grade Evaluation Summary:

Major tests	60%
Attendance.....	10%
Lab reports, homework, and quizzes.	15%
Comprehensive Final examination	15%

Grade Scale:

- 90 to 100: A
- 80 to 89: B
- 70 to 79: C
- 60 to 69: D
- 0 to 59: F

VII. Curriculum Checklist

- **Academic General Education Course** (from ACGM – but not in WCJC Core)
No additional documentation needed

- **Academic WCJC Core Course**
Attach the Core Curriculum Checklist, including the following:
 - Basic Intellectual Competencies
 - Perspectives
 - Exemplary Educational Objectives

- **WECM Courses**
If needed, revise the Program SCANS Matrix & Competencies Checklist.