

# ETec274 Course Specifications

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## Catalog Information

**Course Number and Title:** ETec274 Fundamentals of Microprocessors

**Credit Hours:** 5

**Course Description:** Introduction to microprocessors and programming concepts. Study of structured programming, instruction sets, hardware and interfacing techniques. Laboratory experiments with popular units.

**Prerequisites:** ETEC 273, EET major or written permission.

**Prerequisite Outcomes:** Binary numbers and basic digital logic background

## Schedule Information

**Quarter:** Spring 2007

**Meeting Times and Rooms**

Days	Times	Instructor	Room(s)
MWF	10:00-11:50	Steve Moskowitz	ET331

**Lab Fee:** none

**Enrollment Limit:** 18

## Student Resources

**Student Syllabus:** <http://eet.etec.wvu.edu/etec274/274sp07syl.pdf>

**Course Website:** <http://eet.etec.wvu.edu/etec274/index.html>

## Facilities and Materials

**Required Text:** Heathkit Microprocessor Textbooks 1 & 2

Heathkit Microprocessors Student Workbook

**Lab Equipment:** Heathkit 6800 Microprocessor Trainer

**Software:** None

## Course Outcomes

1. Understand the fundamentals of a microprocessor-based system.
2. Understand and be able to apply binary, octal, hexadecimal, BCD, and ASCII numbers and codes. Be able to perform 2's complement arithmetic.
3. Understand and use CPU registers including condition code flags.
4. Write assembly language programs including conditional branching, stack, subroutines, and interrupts.
5. Be introduced to I/O interfacing with a microprocessor.
6. Be able to use a DMM, power supply, oscilloscope and function generator to evaluate microprocessor-based circuits.
7. Be able to design simple circuits and enter and debug programs using microprocessor or microcontroller trainer.
8. Understand the need for completing work in a timely manner.
9. Understand decoders and memory expansion techniques.

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### Courses Contribution to the Program Outcomes

P – Primary to the purpose of the course. Course contains significant instruction and opportunities for practice.

S – Secondary to the purpose of the course. Course contains limited instruction and opportunities for practice.

N – Not a significant part of this course.

Program Outcome		Course Contrib	Applicable Course Outcome(s)
a	An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines.	P	1, 2, 3, 4, 5, 6, 7, 9
b	An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology	N	
c	An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes	S	4, 6, 7
d	An ability to apply creativity in the design of systems, components or processes appropriate to program objectives	N	
e	An ability to function effectively on teams,	N	
f	An ability to identify, analyze and solve technical problems	P	1, 2, 3, 4, 5, 6, 7, 9
g	An ability to communicate effectively,	N	
h	A recognition of the need for, and an ability to engage in lifelong learning	N	
i	An ability to understand professional, ethical and social responsibilities	N	
j	A respect for diversity and a knowledge of contemporary professional, societal and global issues,	N	
k	A commitment to quality, timeliness, and continuous improvement	S	8
A	The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers to the building, testing, operation, and maintenance of electrical/electronic(s) systems	P	1, 2, 3, 4, 5, 6, 7, 9
B	The applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry	N	
C	The ability to analyze, design, and implement control systems, instrumentation systems, communications systems, computer systems, or power systems	N	
D	The ability to apply project management techniques to electrical/electronic(s) systems	N	
E	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronic(s) systems	S	2

### Outcome Assessment Tools

1. Embedded Micro Module senior survey