



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

| Course Number | Course Title | Credits |
|-----------------------------|-------------------------|-----------------------------------|
| EET 140 | Electronic Construction | 2 |
| Hours: Lecture/Lab/Other | Co- or Pre-requisite | Implementation Semester & Year |
| 1 Lecture/3 Lab | none | Spring 2022 |

Catalog description:

Teaches the use of hand tools, drilling and other metalworking methods as well as correct soldering and repair techniques. Students apply these skills to chassis construction and wiring, and also gain experience in working with printed circuit boards.

General Education Category:
Not GenEd

Course coordinator:
Harry Bittner, 609-570-3751, bittnerh@mccc.edu

Required texts & Other materials:

Course manual provided.

Course Student Learning Outcomes (SLO):

Upon successful completion of this course the student will be able to:

1. Identify circuit symbols and components used in electronics. [ILG # 10, 11]
2. Fabricate a chassis from sheet aluminum and hard wire the circuit. [ILG # 4; PLO #5, 8]
3. Solder and repair printed circuit boards. [ILG # 4; PLO #5, 8]
4. Follow printed documentation including instruction manuals and engineering change notices. [ILG # 10, 11; PLO #8]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Electronics Engineering Technology (PLO)

5. Demonstrate mastery of job skills such as soldering, metalworking, and basic PC board repair.
8. Set up and operate modern electronic equipment such as DMM, oscilloscope, and signal generators.

Units of study in detail – Unit Student Learning Outcomes:

Unit I **Basic Principles of Electricity [Supports Course SLO #1, 2, 3, 4]**

Learning Objectives

The student will be able to:

1. Identify electronic components including their component value.
2. Properly use basic handtools in the construction of electrical projects.
3. Populate a printed circuit board with electronic components observing appropriate polarity as required.
4. Solder components and wires to a printed circuit board.
5. Desolder solder joints on a circuit board using a desoldering pump or desoldering braid.
6. Repair basic issues with printed circuit boards that are damaged.
7. Critically evaluate (including self-evaluate) a project and provide written feedback toward improvement.

Unit II **Series and Parallel Circuits [Supports Course SLOs #1, 2, 3, 4]**

Learning Objectives

The student will be able to:

1. Use a basic chassis layout (blueprint) to create a chassis from sheet metal.
2. Select the appropriate screwdriver based on screw type and size.
3. Cut sheet metal using a sheet metal shear and corner notcher.
4. Cut holes into sheet metal using a drill press or a punch.
5. Use a sheet metal nibbler to cut irregular shapes into sheet metal.
6. Properly mount electronic components in a chassis.
7. Hard wire a circuit using terminal strips and point to point wiring techniques.
8. Critically evaluate (including self-evaluate) a project and provide written feedback toward improvement.

Evaluation of student learning: [Evaluates SLOs # 1, 2, 3, 4]

Students' achievement of the course objectives will be evaluated through the use of the following:

- Three unit tests assessing students' comprehension of terminology, calculations and practices related to the unit objectives.
- Lab grade based on individual reports on experimental results.
- In class participation and attendance.

| Evaluation Tools | Percentage Of Grade |
|-------------------------|----------------------------|
| 3 Unit Tests | 60% |
| Lab Grade | 30% |
| Participation | 10% |
| Total | 100% |