

Mercer County Community College

EET 140

Electronic Construction

COURSE DESCRIPTION:

This course teaches the use of hand tools, drilling and other metal working methods as well as correct soldering and repair techniques. These skills will be applied to chassis construction and wiring. Student also gains experience in working with printed circuit boards.

Text (s):

Prerequisites:

Co-requisites:

Credits: 2 Lecture Hours: 1 Studio/Lab Hours: 3

Course Coordinator: **D.T. DeFino**

Latest Revision: **Summer 2009**

Office: ET130

Hours:

Email: definod@mccc.edu

Phone: 609-570-3456

Attendance Policy:

Mercer County Community College does not have a “cut system.” Students are expected to attend all classes of every course on their schedules. Only illness or serious personal matters may be considered adequate reasons for absence.

It is the prerogative of the instructor to excuse absences for valid reasons, provided the student will be able to fulfill all course requirements.

IF YOU MISS A CLASS IT IS YOUR RESPONSIBILITY TO GET NOTES FROM SOMEONE IN THE CLASS

Student performance in classes is formally verified at the middle of each full semester. If a student's attendance has been infrequent or performance unsatisfactory, he or she may receive notification in the mail. At any time, the instructor may withdraw the student from class for insufficient attendance.

Academic Integrity:

Students are required to perform all the work specified by the faculty and are responsible for the content and integrity of all academic work submitted, such as papers, reports, and examinations. A student will be guilty of violating the Rule of Academic Integrity if he or she:

- Knowingly represents the work of others as his or her own;
- Uses or obtains unauthorized assistance in any academic work;
- Gives fraudulent assistance to another student.

- Intentionally damages any contents of the lab or classroom
- Is found to have stolen anything from the lab or classroom

Penalty:

First Violation for stealing or damaging is F in the course.

First violation on test or project is an "F" grade for the test or project.

Second violation is "F" in the course.

Temporary Grade Policy:

If you do not complete the course requirements by the end of the semester, and you have a prior agreement with the instructor, you may be given an "I" (incomplete). "I" indicates that the instructor is affording extra time to earn a grade in the course. The amount of extra time is determined by the instructor, up to a maximum of 16 calendar weeks after grades are submitted. An "I" grade which has not been resolved within 16 calendar weeks is changed to an F or NC (no credit) grade, as appropriate to the course.

Letter Grades:

Letter grades and quality points are shown in the chart under grading.

Audit:

If you audit the course, you will receive an "AU" grade—this cannot be changed to a letter grade.

Withdrawal Course Requirements: Deadline: Check College Calendar

To receive a W grade for any course, a student must consult with the course instructor or an appropriate division representative and then withdraw officially before two-thirds of the course has been completed by submitting a withdrawal form to the Office of Student Records. Withdrawal after this point results in a grade other than W (usually F). At any time before two-thirds of the course has been completed, the instructor may also withdraw with a W grade any student who has been absent excessively. A student thus withdrawn will not be entitled to any refund of tuition or fees. The student may appeal this action.

GENERAL OBJECTIVES

In general, upon completion of this course, the student will be able to:

1. Identify circuit symbols and components used in electronics.
2. Fabricate a chassis from sheet aluminum and hard wire the circuit.
3. Solder and repair printed circuit boards.
4. Prototype a circuit using wire wrap techniques.
5. Read instruction manuals, including engineering change notices (ECN's), and follow the instructions given.

WEEKLY OUTLINE OF LEARNING OBJECTIVES

Unit I Printed Circuit Boards

Objectives

Upon completion of this Unit, the student will be able to:

- Identify components such as: resistors, capacitors, coils and diodes.
- Remove parts from a PC board.
- Replace parts on a PC board.
- Demonstrate acceptable soldering techniques.
- Wire a circuit containing one IC and passive components using a conventional “bread board”

Week

1	P.C. Board repair and soldering techniques
2 (A)	Bread board a flashing LED circuit.
2-3	Populate and solder a P.C. Board Flashing LED's
4-5	Construction of an FM Transmitter

Unit II Light Controlled ON/Off Switch

Objectives

Upon completion of this Unit, the student will be able to:

- Layout and prepare a sheet of aluminum to be made into a chassis.
- Punch or drill holes, use a corner notcher , metal shear and “bending brake” to fabricate a chassis.
- Follow instructions to install parts and solder parts and wire into a chassis.
- Test a completed circuit
- Distinguish sheet metal, machine and allen screws
- Identify: flat blade and Phillips head screw drivers, wire strippers, wire cutters, pliers

Week

6 – 7A	Metal working techniques – fabricate chassis
7B- 12	Wire the Light controlled on/off switch parts into the chassis as instructed.
13A	Test the circuit and make corrections
13B – 14A	Fabricate the bottom cover for the project.

Unit III Wire Wrap Techniques and Surface Mount Technology

Objectives

Upon completion of this Unit, the student will be able to:

Demonstrate proficiency in prototyping a circuit using wire wrapping techniques.

Week

14-15	Construction of prototype circuit, using w/w techniques.
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GRADING

Since this is predominantly a skills course, there will be no tests.

The manual skills learned in the shop will be practiced and put to use in the fabrication, wiring and assembly of several projects. Each finished project will then be evaluated, based upon:

1. Chassis Fabrication 25 points
2. Component Layout 25 points
3. Soldering Techniques 25 points
4. Circuit Operation 25 points

The project grades will be averaged and used to determine the final grade as follows:

Letter grade	Nominal %	Definition	QPA quality points
A	93-100	Superior achievement	4.0
A-	90-92		3.7
B+	87-89		3.4
B	83-86	Above average achievement	3.0
B-	80-82		2.7
C+	77-79		2.4
C	70-76	Average achievement	2.0
D	60-69	Minimally passing	1.0
F	0-59	Academic failure	0.0

Special Needs

Any student in this class who has special needs because of a disability is entitled to receive accommodations. Eligible students at Mercer County Community College are assured services under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. If you believe you are eligible for services, please contact Arlene Stinson, the Director of Academic Support Services. She can be reached at (609) 570-3525.