EET 141
Electrical Wiring and Cabling

**COURSE DESCRIPTION (from 2015-2016 catalog):**
Focus on electrical wiring techniques starting with 120/240 volts. Instruction for adding connectors to and installing coax, CAT5/6, and fiber optic cables emphasizes the codes and standards to be followed along with the correct tools to be used. Class time allots equally between lectures reinforced by hands-on practice.

Text(s):
- *Practical Electrical Wiring, 22nd ed.*
  By: Frederic P. Hartwell and Herbert P. Richter
  Publisher: Park Publishing, Inc.
- *FOA Reference Guide to Premises Cabling*
  By: Jim Hayes
  Publisher: The Fiber Optic Association, Inc.

Prerequisites: EET130
Co-requisites: None

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

Coordinator: Dominick T. DeFino  Latest Review: Fall 2015

**General Objectives**
Course Competencies/Goals

Students will be able to:
1. Read and interpret electrical diagrams. [GEKG 1,2,3,4] [CS B,D]
2. Properly terminate power distribution and communication wiring. [GEKG 4] [CS B,D]
3. Correctly select and utilize the materials and tools needed to complete a wiring/cabling job. [GEKG 1,2,3,4] [CS B,D]
4. Effectively communicate findings with fellow students using terminology from the wiring and cabling industry. [GEKG 1,4] [CS A,F]
5. Identify faults or potential faults and make needed corrections. [GEKG 2,3,4] [CS B,D]
6. Perform all duties under the standards of the current National Electrical Code (NEC). [CS B,D,F]
General Education Knowledge Goals [GEKG]

Goal 1. Communication. Students will communicate effectively in both speech and writing.
Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

MCCC Core Skills [CS]

Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.
Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.
Goal D. 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.
Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.

Unit Objectives

Unit I  Electrical Power Delivery
The student will be able to:

1. Wire a duplex outlet to an electrical panel. [GO 1,2,3]
2. Wire a 240v outlet to an electrical panel. [GO 1,2,3]
3. Select appropriate circuit breaker protection and wire size to meet load current demand. [GO 3]
4. Exhibit proper grounding techniques. [GO 1,2,3]
5. Identify situations requiring ground fault protection. [GO 1,3]
6. Identify appropriate wire type (insulation and size) based on environmental concerns. [GO 1,3]
7. Test electrical connections; enlisting the help of others as needed and correcting problems as they are encountered. [GO 1,2,3,4,5]
8. Exhibit safe practices in all aspects of wiring and cabling. [GO 6]
Unit II  Communication Wiring
The student will be able to:

1. Identify the categories of unshielded twisted pair (UTP) cables. [GO 3]
2. Exhibit correct practices in the handling of UTP cables. [GO 2,3]
3. Terminate an RJ45 modular 8-pin connector to a UTP cable. [GO 1,2,3]
4. Strip RG59 coax and add a BNC style connector. [GO 2,3]
5. Test terminated connections; enlisting the help of others as needed and correcting problems as they are encountered. [GO 1,4,5]
6. Identify causes of attenuation and crosstalk in a cable. [GO 2,5]
7. Exhibit safe practices in all aspects of wiring and cabling. [GO 6]

Unit III  Fiber Optics and Communication Cabling
The student will be able to:

1. Identify the benefits of fiber optic cable vs. copper cable. [GO 3]
2. Install, cleave and polish an ST style connector on multimode fiber. [GO 2,3,5]
3. Test a fiber optic jumper for loss using a light source and power meter. [GO 3,5]
4. Address environmental concerns (heat, rodents, etc.) in the installation of a cable. [GO 3,5,6]
5. Draw a basic layout of the premises cabling within a building. [GO 1,3,5,6]
6. Test communication wiring; enlisting the help of others as needed and correcting problems as they are encountered. [GO 1,4,5]
7. Exhibit safe practices in all aspects of wiring and cabling. [GO 6]

Method of Instruction

Learning will take place via classroom instruction, demonstrations, and student activities, as well as through textbook readings and homework assignments. Lab activities will augment this. Use of equipment and manual skills will be developed in the lab.

Student Evaluation

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. [GO1,2,3,4,5,6]
- Lab grade based on individual reports on experimental results. [GO1,2,3,4,5,6]
- In class participation, homework and attendance. [GO1,2,3,4,5,6]

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<thead>
<tr>
<th>Evaluation Tools</th>
<th>Percentage Of Grade</th>
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<tbody>
<tr>
<td>3 Unit Tests</td>
<td>50%</td>
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<tr>
<td>Lab Grade</td>
<td>40%</td>
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<tr>
<td>Participation</td>
<td>10%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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**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.

**Special Accommodations**

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 at her office in LB221 or at office number which is: (609) 570-3525.