

COURSE OUTLINE

**Electronics and Computer Technology 160
Inspection and Codes for Electricians**

I. Catalog Statement

Electronics and Computer Technology 160 is a course designed to introduce the student to the National Electrical Code using national, state and local codes. Included in the course are duties of the electrical inspector with emphasis on code enforcement, inspection procedures, plan reading, electrical symbols and terminology. Methods of performing electrical inspections and interpreting electrical systems are based on the current electrical codes and standards. Emphasis will be placed on the importance of safety, asbestos abatement awareness, and anchoring and supporting for earthquake mitigation. Quality workmanship, efficient and well-designed electrical systems and retrofitting will be emphasized.

Total Lecture Units: 3.0

Total Course Units: 3.0

Total Lecture Hours: 48.0

Total Faculty Contact Hours: 48.0

Prerequisite: ECT 102 or equivalent.

II. Course Entry Expectations

Skills Level Ranges: Reading 5; Writing 5; Listening/Speaking 5; Math 3.

Prior to enrolling in the course, the student should be able to:

1. construct ac reactive circuits, using appropriate circuit components and following proper schematic diagrams;
2. analyze and troubleshoot complex ac reactive circuits, using appropriate electronic test equipment, evaluating measured results of circuit parameters;
3. develop diagnostic programs in BASIC that analyze ac reactive networks.
4. demonstrate critical thinking skills by attaining satisfactory scores on examination procedures solving problems in the analysis of ac reactive and logarithms, algebra, determinants, and trigonometry.

III. Course Exit Standards

Upon successful completion of the required coursework, the student should be able to:

1. apply the inspection process using national, state and local codes;

2. interpret the duties of an electrical inspector with emphasis on code enforcement, inspection procedures and plan reading;
3. define electrical symbols and terminology;
4. outline the principles of energy management systems and retrofitting;
5. outline the methods of interpreting electrical systems based on the current electrical codes and standards;
6. cite the importance of safety regarding asbestos abatement awareness and the anchoring and supporting for earthquake mitigation;
7. recognize efficient and well-designed electrical systems for residential, industrial and commercial locations.

IV. Course Content

Total Faculty Contact Hours = 48

- | | |
|--|----------|
| A. National Electrical Code and Local Code (NEC) | 10 Hours |
| 1. Purpose and intent of electrical codes | |
| 2. Scope on NEC and local codes | |
| 3. State codes versus local codes | |
|
 | |
| B. Utilizing Code Book | 15 Hours |
| 1. Mandatory rules | |
| 2. Fine print rules | |
| 3. “Neat and workmanlike” | |
| 4. Locate definitions | |
| 5. Interpretations | |
| 6. Recognize and use exceptions | |
| 7. Materials recognized by NEC | |
| 8. Identify code markings | |
| 9. Distinguish wet, damp, and dry locations | |
| 10. Determine if specific locations are acceptable to code | |
| 11. Requirements for special occupancies | |
| 12. Answer specific questions | |
|
 | |
| C. Use NEC to Calculate Various Conductors and Fill Situations | 15 Hours |
| 1. Service conductors | |
| 2. Permissible loads on various circuits | |
| 3. Allowable cable tray fills | |
| 4. Imparity of various conductor and fill situations | |
| 5. Imparity of various circuits and load types | |
| 6. Overload protection for motors, equipment, and phase | |
| 7. Minimum ampacity for motor disconnect means | |
| 8. Horsepower ratings for motors and disconnecting means | |
| 9. Grounding requirements | |
|
 | |
| D. Use NEC for hazardous locations | 8 Hours |
| 1. Hazardous locations by class | |
| 2. Equipment and wiring methods necessary for particular hazardous locations | |

V. Methods of Instruction

The following methods of instruction may be used in the course:

1. lecture;
2. demonstrations;
3. multimedia;
4. guest speakers.

VI. Out of Class Assignments

The following out of class assignments may be used in the course:

1. individual projects (i.e. written assignments, reading reports);
2. group projects (i.e. homework problems, problem solving demonstrations, discussion on textbook topics).

VII. Methods of Evaluation

The following methods of evaluation may be used in the course:

1. quizzes;
2. unit examinations;
3. mid-term examination;
4. final examination.

VIII. Textbooks

Holt, M. *Mike Holt's Illustrated Guide to Understanding the NEC Volume 1*.
Current Edition. Leesburg, FL: Mike Holt Enterprises, Inc., 2011.
10th Grade Textbook Reading Level. ISBN: 978-1932685510

IX. Student Learning Outcomes

Upon successful completion, the student will be able to:

1. apply the inspection process using national, state and local codes.
2. interpret the duties of an electrical inspector with emphasis on code enforcement, inspection procedures and plan reading.
3. define electrical symbols and terminology.
4. recognize efficient and well-designed electrical systems for residential, industrial and commercial locations.