COURSE OUTLINE : ECT 160
D Credit – Degree Applicable
COURSE ID 004200
Cyclical Review: September 2020

COURSE DISCIPLINE : ECT

COURSE NUMBER : 160

COURSE TITLE (FULL) : Inspection and Codes for Electricians

COURSE TITLE (SHORT) : Inspect & Codes Electricians

CATALOG DESCRIPTION

ECT 160 is a course designed to introduce the student to the National Electrical Code (NEC) 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: 3.00

Total Laboratory Units: 0.00

Total Course Units: 3.00

Total Lecture Hours: 54.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 54.00

Total Out-of-Class Hours: 108.00

Prerequisite: ECT 110 or equivalent.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ECT	110	Electricity and Electronics Principles	Describe basic laboratory equipment and components;	Yes
2	ECT	110	Electricity and Electronics Principles	determine the value of resistors from their color code, measure DC (Direct Current) and AC (Alternating Current) voltage;	Yes
3	ECT	110	Electricity and Electronics Principles	identify conductors and insulators, and test common types of switches;	Yes
4	ECT	110	Electricity and Electronics Principles	measure current in a circuit, verify ohms law, investigate errors in measurement;	Yes
5	ECT	110	Electricity and Electronics Principles	design a series and parallel circuit that will meet specified resistance requirements;	Yes
6	ECT	110	Electricity and Electronics Principles	develop a general rule for calculating the voltage across each resister in an unloaded and loaded resistive voltage divider;	Yes
7	ECT	110	Electricity and Electronics Principles	develop methods of troubleshooting circuits using voltage, current, capacitor and resistance measurements;	Yes
8	ECT	110	Electricity and Electronics Principles	identify the operating controls of an oscilloscope;	Yes
9	ECT	110	Electricity and Electronics Principles	identify the controls and features of an audio frequency generator;	Yes
10	ECT	110	Electricity and Electronics Principles	describe the effect of AC and DC electrical motors and inductance;	Yes
11	ECT	110	Electricity and Electronics Principles	identify and measure affect transformers and magnetic relays and contactors.	Yes

EXIT STANDARDS

1 List the steps in the inspection process using national, state and local codes;
2 outline the principles of energy management systems and retrofitting;
3 outline the methods of interpreting electrical systems based on the current electrical codes and standards;
4 cite the importance of safety regarding asbestos abatement awareness and the anchoring and supporting for earthquake mitigation;
5 recognize efficient and well-designed electrical systems for residential, industrial and commercial locations.

STUDENT LEARNING OUTCOMES

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

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	National Electrical Code and Local Code (NEC) • Purpose and intent of electrical codes • Scope on NEC and local codes • State codes versus local codes	10	0	10
2	Utilizing Code Book • Mandatory rules • Fine print rules • "Neat and workmanlike" • Locate definitions • Interpretations • Recognize and use exceptions • Materials recognized by NEC • Identify code markings • Distinguish wet, damp, and dry locations • Determine if specific locations are acceptable to code • Requirements for special occupancies • Answer specific questions	18	0	18
3	Use NEC to Calculate Various Conductors and Fill Situations • Service conductors • Permissible loads on various circuits • Allowable cable tray fills • Imparity of various conductor and fill situations • Imparity of various circuits and load types • Overload protection for motors, equipment, and phase • Minimum ampacity for motor disconnect means • Horsepower ratings for motors and disconnecting means • Grounding requirements	18	0	18

4	Use NEC for hazardous locations • Hazardous locations by class • Equipment and wiring methods necessary for particular hazardous locations	8	0	8
				54

OUT OF CLASS ASSIGNMENTS

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

METHODS OF EVALUATION

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

METHODS OF INSTRUCTION

- [x] Lecture
- [ ] Laboratory
- [ ] Studio
- [x] Discussion
- [x] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [x] Collaboratory Learning
- [x] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [x] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Understanding the National Electical Code	Required	Mike Holt Enterprises		print	Holt, Mike	978-0-9863534-5-1	2017