STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

ECMR 173 – Introduction to the National Electrical Code

CIP Code: 46.0399

Created by: Michael J. Newtown, P.E.
Updated by:

Canino School of Engineering Technology
Civil and Construction Technology
Fall 2021

A. TITLE: Introduction to the National Electrical Code

B. COURSE NUMBER: ECMR 173

C. CREDIT HOURS (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity):

 # Credit Hours: 3
 # Lecture Hours _3__ per Week
 # Lab Hours _ Week
Other ___ per Week

Course Length (# of Weeks): 15 weeks

D. WRITING INTENSIVE COURSE: No

E. GER CATEGORY:
Does the course satisfy more than one GER category? If so, which one? No

F. SEMESTER(S) OFFERED: (*Fall, Spring, or Fall and Spring*) **Fall**

G. COURSE DESCRIPTION:
This course will cover the basics of understanding the National Electrical Code, with electrical drawing illustrations. Topics include circuit, overcurrent protection devices, box and wire sizing, with service entrance design. A final project will include a residential electrical design in accordance with the National Electric Code.. Certificate/ AAS Elective Credit.

.

H. PRE-REQUISITES: None
CO-REQUISITES: None

I. STUDENT LEARNING OUTCOMES:

Course Student Learning Outcome [SLO]	***PSLO***	***GER***	***ISLO***
a. Apply NEC references to installation practices			5. **Industry, Professional, Discipline Specific Knowledge and Skills**
b. Identify electrical symbols with architectural scale applications for electrical blueprint reading			**Industry, Professional, Discipline Specific Knowledge and Skills**

c. Apply calculated loads of a residential dwelling for sizing service entrances			5. **Industry, Professional, Discipline Specific Knowledge and Skills**
d. Apply skills for residential house electrical system design as per NEC specifications with material list and pricing			**5. Industry, Professional, Discipline Specific Knowledge and Skills**
e. Demonstrate navigation of the NEC references			**5. Industry, Professional, Discipline Specific Knowledge and Skills**

KEY	**Institutional Student Learning Outcomes [ISLO 1 – 5]**
ISLO #	**ISLO & Subsets**
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

J. APPLIED LEARNING COMPONENT: **Yes__X____ No_____**

If Yes, select one or more of the following categories:

Classroom/Lab___X
Internship___
Clinical Practicum___
Practicum___
Service Learning___
Community Service___
Civic Engagement___
Creative Works/Senior Project___
Research___
Entrepreneurship___
(program, class, project)

K. TEXTS:

Miller, Charles (2015). *Illustrated Guide to the National Electrical Code* 6E. Clifton Park: Delmar/Cengage

L. REFERENCES: NFPA. *NFPA 70 National Electrical Code 2014*. Quincy, Ma: NFPA

M. EQUIPMENT: Architectural Scale

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

- Exams (Hourly/Final): 20%
- Quizzes: 30%
- Homework assignments: 40%
- Participation/Attendance: 10%
  (May be modified by instructor)

P. DETAILED COURSE OUTLINE:

I. Introduction to NEC
   A. History
   B. Listing/Labeling for Product Standards
   C. How to navigate the code book

II. Definitions
   A. Code Terminology

III. Boxes and Enclosures
   A. Box Fill Calculations
   B. General Installation
   C. Box/Luminaire Support

IV. Cables
   A. General Installation
   B. Conductor Identification
   C. Grounded Conductors
   D. Underground Installation

V. Raceways and Conductors
   A. General Descriptions
   B. Types and Uses

VI. General Provisions
   A. Electrical Floor Plan (Blueprint)
   B. Branch Circuits
   C. Receptacles
   D. AFCI Requirements
   E. Other Considerations
   F. Lighting and Switching
   G. Outdoor Receptacles and Lighting

VII. Specific Provisions
- A. Small Appliance Circuit
- B. Hallway/Stairs
- C. Closets
- D. Bathrooms
- E. Basement and Garage
- F. Laundry area
- G. Attic/Crawl Space

VIII. Load Calculation
- A. Compile Critical Information
- B. Standard Calculation

IX. Services and Electrical Equipment
- A. Wiring Methods
- B. Outside Clearances
- C. Working Space
- D. Equipment and Panel Boards
- E. Grounding

Q. LABORATORY OUTLINE: None