

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



MASTER SYLLABUS

ECMR 104 – Electricity for Trades II Lab

CIP Code: 46.0399

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Updated by:

**Canino School of Engineering Technology
Civil and Construction Technology
Fall 2021**

- A. TITLE: Electricity for Trades II Lab
- B. COURSE NUMBER: ECMR 104
- C. CREDIT HOURS (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity):

Credit Hours: 4
Lecture Hours
Lab Hours 4 - (2) hours per 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*) **Spring**

G. COURSE DESCRIPTION: Continuation of Electricity for Trades I. Includes additional instruction in basic AC system theory, three phase circuits, motors - motor control, transformer theory - connections. Laboratory projects include diagnosis of electrical equipment, motors - motor starters, transformer connections and raceway installations for Commercial Electrical applications.

- H. PRE-REQUISITES: Yes - ECMR 101, MECH 128
 CO-REQUISITES: Yes - ECMR 102, Math 101 or Math 106

I. STUDENT LEARNING OUTCOMES: By the end of the course, the student will be able to:

<u>Course Student Learning Outcome [SLO]</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a. Demonstrate current flow for a given circuit	2. Connect electrical devices in accordance with NEC		5-Ind, Prof, Disc, Know, Skills
b. Demonstrate motor circuit sizing	2. Connect electrical devices in accordance with NEC 3. Perform Routine Maintenance on motors and transformers 4. Install motor control circuits		5-Ind, Prof, Disc, Know, Skills

c. Apply NEC code to transformer circuits	2. Connect electrical devices in accordance with NEC 3. Perform Routine Maintenance on motors and transformers		5-Ind, Prof, Disc, Know, Skills
d. Create multi-phase circuits	3. Perform Routine Maintenance on motors and transformers		5-Ind, Prof, Disc, Know, Skills

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

J. APPLIED LEARNING COMPONENT: Yes No

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

Classroom/Lab
 Internship
 Clinical Practicum
 Practicum

Civic Engagement
 Creative Works/Senior Project
 Research
 Entrepreneurship

Service Learning____
Community Service____

(program, class, project)

- K. TEXTS:
Hermon, Stephen. Delmar's standard Textbook of Electricity 6th Edition.
Clifton Park: Cengage.
- L. REFERENCES: National Electric Code Book 2017
- M. EQUIPMENT: Supplied by college motors, transformers, conduit benders, motor starters and electrical conductors.
- N. GRADING METHOD: A-F
- O. SUGGESTED MEASUREMENT CRITERIA/METHODS:
- Exams
 - Quizzes
 - Papers
 - Attendance
- P. DETAILED COURSE OUTLINE:
N/A
- Q. LABORATORY OUTLINE: Yes
- 1) **Drill, Tap and Caliper Measurements**
 - 2) **Metal Clad Cable #1**
 - 3) **Metal Clad Cable #2**
 - 4) **Metal Clad Cable #3**
 - 5) **Electric Water Heater**
 - 6) **120 Volt Relay Circuit**
 - 7) **Water Tower Control Circuit**
 - 8) **Single Phase Transformers Step Up- Step Down**
 - 9) **Single Phase Transformer Three Wire Secondary**
 - 10) **EMT Raceway cutting, Reaming**
 - 11) **EMT Raceway Bending #1**
 - 12) **EMT Raceway Bending #2**
 - 13) **EMT Raceway Bending #3**
 - 14) **Three Phase Transformers Delta to Wye**
 - 15) **Three Phase Transformers Wye to Delta**
 - 16) **Three Phase Transformers Wye to Wye**
 - 17) **Three Phase Transformers Delta to Delta**
 - 18) **Three Phase Motor Testing**
 - 19) **Three Phase Load Testing**
 - 20) **Photo Eye Control 120 Volt Load**
 - 21) **Photo Eye Control 208 Volt Load**
 - 22) **120 Volt Holding Circuit**
 - 23) **Motor Starter Two Wire Control**
 - 24) **Motor Starter Three Wire Control**