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

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
MSPT 112 - Powersports Electrical Systems

Created by: Christopher Mayville

Updated by:

Canino School of Engineering Technology !

Department: Mechanical & Energy Technologies !

Semester/Year: Fall 2018 !

A. **TITLE**: Powersports Electrical Systems

B. **COURSE NUMBER:** MSPT 112

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

 # Credit Hours: 3
 # Lecture Hours: 3 **per week**
 # Lab Hours: **per week**
Other: **per week**

Course Length: 15 **Weeks**

D. **WRITING INTENSIVE COURSE**: Yes ☐ No ☒

E. **GER CATEGORY: None:** ☒ **Yes:** GER !
***If course satisfies more than one*:** GER !

F. **SEMESTER(S) OFFERED: Fall** ☒ **Spring** ☐ **Fall & Spring** ☐

G. **COURSE DESCRIPTION:**

This course is a study of fundamental electrical circuits and relative theory as applied to powersports machines. Series, parallel, series-parallel circuits, magnetism, direct and alternating current fundamentals; batteries, charging systems, starters, lighting systems, and basic electronics are studied.

H. **PRE-REQUISITES: None** ☒ **Yes** ☐ **If yes, list below:**

CO-REQUISITES: None ☐ **Yes** ☒ **If yes, list below:**

MSPT 122 Powersports Electrical Lab, or with permission of instructor

I. STUDENT LEARNING OUTCOMES: (*see key below*)

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER*** *[If Applicable]*	***ISLO & SUBSETS***	
Construct series, parallel, and series-parallel circuits demonstrating fundamentals of electricity	MSPT SO 2		ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
Calculate circuit elements of voltage, resistance, and current using Ohm's Law	MSPT SO 2		ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
Write and recite battery, starting, and charging systems theory of operation	MSPT SO 1		ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
Evaluate wiring diagrams to produce a simplified version to show understanding of the above	MSPT SO 1 MSPT SO 4		ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
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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**

*Include program objectives if applicable. Please consult with Program Coordinator !

J. APPLIED LEARNING COMPONENT: Yes ☐ No ☒

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

- ☐ Classroom/Lab
- ☐ Internship
- ☐ Clinical Placement
- ☐ Practicum
- ☐ Service Learning
- ☐ Community Service
- ☐ Civic Engagement
- ☐ Creative Works/Senior Project
- ☐ Research
- ☐ Entrepreneurship (program, class, project)

K. TEXTS:

Automotive Electrical and Engine Performance by James D. Halderman, Pearson Education Inc.

L. REFERENCES:

Manufacturer service manuals

M. EQUIPMENT: None ☐ **Needed:** Classroom with technology

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Exams, quizzes, homework

P. DETAILED COURSE OUTLINE:

1. Introduction
- **a. Tools**
- **b. Safety**

2. Basics of Circuit Construction
- **a. Basics of Electricity**
- **b. Electrical Terms**
- **c. Conductors and Insulators**
- **d. Circuit Protection**

3. Meter Usage
- **a. Picking the Correct Meter**
- **b. Use Selections**
- **c. Proper Techniques**

4. Ohm's Law
- **a. Series Circuits**
- **b. Parallel Circuits**
- **c. Series-Parallel Circuits**

5. Batteries
- **a. Construction (lead acid, AGM)**
- **b. Ratings (Cold cranking amps, marine cranking amps, amp hours)**

c. Testing
d. Set-up and maintenance

6. Starting Systems
a. Types (mechanical vs electrical)
c. Operation/Magnetism
d. Control Circuits
e. Testing
f. Engagement

7. Charging Systems
a. Types (permanent magnet vs electromagnet)
b. Operation/Generation
c. Testing (includes stator and rectifier regulator testing)

8. Wiring diagrams

9. Lighting Systems Introduction (used often to introduce wiring diagrams, Ohm's law, and meter usage)

Q. <u>LABORATORY OUTLINE</u>: None ☒ Yes ☐