

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



MASTER SYLLABUS

AUTO 212 AUTOMOTIVE ELECTRICAL SYSTEMS II

CIP Code: 47.0604

**Created by: Brandon Baldwin
Updated by: Brandon Baldwin**

**CANINO SCHOOL OF ENGINEERING TECHNOLOGY
AUTOMOTIVE TECHNOLOGY
FALL 2022**

A. TITLE: Automotive Electrical Systems II

B. COURSE NUMBER: AUTO 212

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

Credit Hours: 4

Lecture Hours 3 per Week

Lab Hours 3 Week

Other ___ per Week

Course Length (# of Weeks): 15

D. WRITING INTENSIVE COURSE: NO

E. GER CATEGORY: NONE

F. SEMESTER(S) OFFERED: Spring

G. COURSE DESCRIPTION:

This course begins where Automotive Electrical Systems terminates. Topics covered include lighting, gauges, warning devices, driver information systems, horn and wiper operations, and electrical accessory diagnosis and repair.

H. PRE-REQUISITES: AUTO 112 Automotive Electrical Systems

CO-REQUISITES: AUTO 214 Automotive Computer Systems

I. STUDENT LEARNING OUTCOMES:

<u>Course Student Learning Outcome [SLO]</u>	<u>PSLO</u>	<u>ISLO</u>	<u>Subsets</u>
Apply electrical knowledge to diagnose the cause of brighter than normal, intermittent, dim, or no light operation.	ALO1, ALO2, ALO3	2-Crit Thinking 5-Ind, Prof, Disc, Know Skills	CA, IA, PS
Inspect, replace, and aim headlights and bulbs.	ALO1, ALO2, ALO3	2-Crit Thinking 5-Ind, Prof, Disc, Know Skills	CA, IA, PS
Apply electrical knowledge to diagnose incorrect turn signal or hazard light operation, gauges, wires, printed circuit boards, warning devices, driver	ALO1, ALO2, ALO3	2-Crit Thinking 5-Ind, Prof, Disc, Know Skills	CA, IA, PS

information systems, sensors, horns, wipers, washers, motor-driven accessories, heated accessories, cruise control systems, and supplemental restraint systems.			

KEY	<u>Institutional Student Learning Outcomes</u> [ISLO 1 – 5]
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 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: Today's Technician: Automotive Electricity and Electronics, Classroom and Shop Manual Pack, 7th Edition, Barry Hollembeak

L. REFERENCES: ShopKey Pro

M. EQUIPMENT: Snap-On Electrical trainers and student tool boxes

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS: Exams, quizzes, homework, lab practical, and lab performance

P. DETAILED COURSE OUTLINE:

I. Review of Electrical Fundamentals

1. Ohm's Law
2. Series Circuits
3. Parallel Circuits
4. Series/Parallel Circuits
5. Wiring Diagrams
6. Electrical Components
7. Battery, Starting, and Charging Systems

II. Lighting Systems

- Multiple incandescent bulb operation and diagnosis
- LED operation and diagnosis
- HID headlight safety and voltage

III. Gauges, Warning Devices, and Driver Information Centers

- Instrument Panel device operation and diagnosis
- Circuit board operation and diagnosis
- Sensor testing

IV. Horn and Wiper Systems

- Horn operation
- Base wiper operation
- Intermittent wiper operation
- Rain sense wiper operation
- Washer systems, front and rear

V. Accessories

1. Motor driven accessories
 - a. Power mirrors
 - b. Power seats
 - c. Power locks
 - d. Vent windows
 - e. Blowers
 - f. Hidden headlights
2. Heated glass
3. Cruise control systems
4. Supplemental restraint systems

5. Radios/sound systems
6. Door panel controls/door panel remove and install
7. Scan tool diagnostics of body controls

VI. Driver Information & Navigation Systems

Q. LABORATORY OUTLINE:

I. Review of Electrical I

1. Measurement
2. Building circuits
3. Practice on vehicles

II. Lighting Systems

- Multiple incandescent bulb operation and diagnosis
- LED operation and diagnosis
- HID headlight safety and voltage

III. Gauges, Warning Devices, and Driver Information Centers

- Instrument Panel device operation and diagnosis
- Circuit board operation and diagnosis
- Sensor testing

IV. Horn and Wiper Systems

- Horn operation
- Base wiper operation
- Intermittent wiper operation
- Rain sense wiper operation
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VI. Driver Information & Navigation Systems