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:

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>PSLO</th>
<th>ISLO</th>
<th>Subsets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply electrical knowledge to diagnose the cause of brighter than normal, intermittent, dim, or no light operation.</td>
<td>ALO1, ALO2, ALO3</td>
<td>2-Crit Thinking 5-Ind, Prof, Disc, Know Skills</td>
<td>CA, IA, PS</td>
</tr>
<tr>
<td>Inspect, replace, and aim headlights and bulbs.</td>
<td>ALO1, ALO2, ALO3</td>
<td>2-Crit Thinking 5-Ind, Prof, Disc, Know Skills</td>
<td>CA, IA, PS</td>
</tr>
<tr>
<td>Apply electrical knowledge to diagnose incorrect turn signal or hazard light operation, gauges, wires, printed circuit boards, warning devices, driver</td>
<td>ALO1, ALO2, ALO3</td>
<td>2-Crit Thinking 5-Ind, Prof, Disc, Know Skills</td>
<td>CA, IA, PS</td>
</tr>
</tbody>
</table>
information systems, sensors, horns, wipers, washers, motor-driven accessories, heated accessories, cruise control systems, and supplemental restraint systems.

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

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)

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
   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