MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
AUTO 122 – AUTOMOTIVE ELECTRICAL SYSTEMS LABORATORY

Created by: Brandon Baldwin

Updated by: Brandon Baldwin

Canino School of Engineering Technology

Department: AUTOMOTIVE TECHNOLOGY

Semester/Year: FALL 2018
A. **TITLE:** Automotive Electrical Systems Laboratory

B. **COURSE NUMBER:** AUTO 122

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

   - # Credit Hours: 1
   - # Lecture Hours: per week
   - # Lab Hours: 3 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:**

   The laboratory component of this course consists of hands-on activities involving theories learned in the classroom. Students use service information, both hard-copy and electronic. Testing involves batteries; series, parallel, and series-parallel circuits, as well as charging and starting systems component identification and service.

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

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

   AUTO 112 Automotive Electrical Systems
I. **STUDENT LEARNING OUTCOMES:** (see key below)

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

<table>
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<tr>
<th><strong>Course Student Learning Outcome [SLO]</strong></th>
<th><strong>Program Student Learning Outcome [PSLO]</strong></th>
<th><strong>GER [If Applicable]</strong></th>
<th><strong>ISLO &amp; SUBSETS</strong></th>
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<td>Demonstrate knowledge basic electrical and electronic theories.</td>
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<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
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<td>Interpret DVOM readings to diagnose electrical circuits.</td>
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<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
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<td>Read and interpret electrical schematic charts.</td>
<td>ALO2</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
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<td>Diagnose &amp; service the charging, starting, and accessory systems.</td>
<td>ALO2, ALO3</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
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<td>Institutional Student Learning Outcomes [ISLO 1 – 5]</td>
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<td>ISLO #</td>
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</table>
| 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:**

Electrical and Electronic Systems; NATEF standards job sheets, by Jack Erjavec/Ken Pickerill

L. **REFERENCES:**

ShopKeyPro, AllData, Subaru STIS

M. **EQUIPMENT:** None ☐ Needed: Snap-On 504 DVOM, VAT-40, jumper wires, Snap-On Electrical Trainers

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Lab Performance, Lab Practical, Job Sheet completion

P. **DETAILED COURSE OUTLINE:**

Q. **LABORATORY OUTLINE:** None ☐ Yes ☑

1. Introduction
   a. Tools
   b. Safety
   c. Filing out a repair order
2. Snap-On 504 Meter Training and Certification
3. Basics of Circuit Construction
   a. Protection Devices
   b. Components of Snap-On Training Boards
   c. Construction of Circuits on Training Boards
      1. Series
      2. Parallel
      3. Series Parallel
      4. Use of Relays
4. On-Car Service
   a. Checking Fuses
   b. Jump Starting
   c. Charging a Battery
   d. Checking Continuity
   e. Checking Voltage Drops
   f. Checking for Parasitic Draw
   g. Checking Blower Resistors
   h. Checking Solenoids
   i. Battery Testing
   j. Starter Testing
   k. Charging System Testing
   l. Accessories Testing (if time permits)