MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
AUTO 103 – AUTOMOTIVE AIR CONDITIONING

Created by: Jeffery Stinson

Updated by: Brandon Baldwin

Canino School of Engineering Technology !

Department: Automotive Technology Program !

Semester/Year: Spring 2019 !
A. **TITLE:** Automotive Air Conditioning

B. **COURSE NUMBER:** AUTO 103

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

   # Credit Hours: 2
   # Lecture Hours: 1 per week
   # Lab Hours: 2 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:**

   A study of the component parts of automotive air conditioning systems, their function and operation. Laboratory will consist of hands-on experience in testing, evacuation, and charging of the system. Refrigerant identification, safety, and environmental issues are addressed, along with fundamentals of manual and automatic controls.

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

   AUTO 112 & AUTO 122

   **CO-REQUISITES:** None ☑ Yes ☐ If yes, list below:
I. **STUDENT LEARNING OUTCOMES:** *(see key below)*

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

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>Program Student Learning Outcome [PSLO]</th>
<th>GER [If Applicable]</th>
<th>ISLO &amp; SUBSETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain Air Conditioning Principals</td>
<td>ALO1</td>
<td>N/A</td>
<td>CA</td>
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<td>PS</td>
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<td>W</td>
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<tr>
<td>Classify types of automotive Air</td>
<td>ALO2</td>
<td>N/A</td>
<td>CA</td>
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<td>Conditioning</td>
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<td>Subsets</td>
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<tr>
<td>Use service information to diagnosis</td>
<td>ALO1</td>
<td>N/A</td>
<td>CA</td>
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<tr>
<td>and repair Automotive Heating and Air</td>
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<td>IA</td>
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<td>Conditioning Systems</td>
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<td>IM</td>
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<tr>
<td>Operate Air Conditioning gas</td>
<td>ALO1</td>
<td>N/A</td>
<td>CA</td>
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<td>recovery and recycle equipment</td>
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<td>Subsets</td>
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**Key:**

- **ISLO:** Integrative Skills and Learning Outcomes
- **GER:** General Education Requirements
- **Subsets:** Specific learning outcomes not listed in the table.
<table>
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<tr>
<th>ISLO</th>
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<th>Subsets</th>
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<td>ISLO #</td>
<td>Institutional Student Learning Outcomes [ISLO 1 – 5]</td>
<td>ISLO &amp; Subsets</td>
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<td>1</td>
<td>Communication Skills</td>
<td>Oral [O], Written [W]</td>
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<td>2</td>
<td>Critical Thinking</td>
<td>Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</td>
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<td>3</td>
<td>Foundational Skills</td>
<td>Information Management [IM], Quantitative Lit./Reasoning [QTR]</td>
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<td>4</td>
<td>Social Responsibility</td>
<td>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</td>
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<td>5</td>
<td>Industry, Professional, Discipline Specific Knowledge and Skills</td>
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</table>

*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:**


L. **REFERENCES:**

Manufacturer service manuals, AllData, ShopKeyPro.

M. **EQUIPMENT:** None ☐ Needed: Student tool list.

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

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

Exams, Quizzes, Homework, Lab Performance.

P. **DETAILED COURSE OUTLINE:**

1. Introduction
   a. Tools
   b. Safety
2. Fundamentals of Heating and Refrigeration
   a. Atomic Properties
   b. Pressure and Temperature
   c. Refrigerants and Lubricants
   d. Refrigerants and the Environment
3. Heating Systems
   a. Engine Cooling Systems
   b. Heater System Operation
   c. Cooling and Heating System Diagnosis
4. Refrigeration Systems
   a. Components
   b. Orifice Tube Systems
   c. TXV systems
   d. Refrigeration System Service
   e. Refrigeration System Diagnosis
f. Retrofits
5. Electrical and Electronic Systems
   a. Components
   b. Compressor Control Circuits
   c. Blower Control Circuits
   d. Electrical Diagnosis
6. Air Distribution Systems
   a. Air Distribution
   b. Manual Systems
   c. Automatic Temperature Control
   d. Air Distribution Diagnosis

Q. LABORATORY OUTLINE: None ☒ Yes ☐

same