A. **TITLE:** Diesel Engines

B. **COURSE NUMBER:** AUTO 102

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

  # Credit Hours: 2  
  # Lecture Hours: 1 per week  
  # Lab Hours: (1) 110 minute lab 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 course, which considers the basic construction of the diesel engine. Topics will include classification of diesel engines, fuels, turbochargers, injection systems, and pre-heater systems. Laboratory will consist of hands-on experience in engine troubleshooting, parts identification, adjustments and testing. The Course will meet for one-hour lecture, two hours laboratory per week.

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

   AUTO 101, AUTO 111, MSPT 101, or permission of instructor.

   **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>
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</thead>
<tbody>
<tr>
<td>Demonstrate shop laboratory safety.</td>
<td>ALO1, ALO2, ALO3, ALO4</td>
<td>N/A</td>
<td>2-Crit Think</td>
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<td>PS PS Subsets</td>
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<td>Demonstrate skills necessary to perform diesel engine service.</td>
<td>ALO1, ALO2, ALO3, ALO4</td>
<td>N/A</td>
<td>2-Crit Think</td>
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<td>Use service literature to perform diesel engine disassembly, inspection and reassembly.</td>
<td>ALO1, ALO2, ALO3, ALO4</td>
<td>N/A</td>
<td>2-Crit Think</td>
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<td>Explain fundamentals of diesel engine fuel system operation.</td>
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<td>Demonstrate skills necessary to maintain, diagnose diesel engine fuel systems.</td>
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<td>Social Responsibility</td>
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<td>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</td>
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<td>Industry, Professional, Discipline Specific Knowledge and Skills</td>
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*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:**

All Data, Manufacturers Service Manuals, IATN.

M. **EQUIPMENT:** None ☐ Needed: Students are required to have tools from the tool list.

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

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

Tests, Quizzes, Homework, Lab Tasks, Performance Exam, Participation.

P. **DETAILED COURSE OUTLINE:**

I. Introduction
II. Service Information
III. Special diesel engine service tools
IV. Diesel engine service safety and environmental concerns
V. Diesel engine components
VI. Diesel engine lubrication system
VII. Diesel engine cooling system
VIII. Diesel engine breathing system
IX. Diesel engine retarder system
X. Diesel engine overhaul-ICE
XI. Diesel engine fuel system
XII. Engine management electronics
XIII. Emissions

Q. **LABORATORY OUTLINE:** None ☐ Yes ☒ same