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

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
AUTO 114 – ENGINE PERFORMANCE I LABORATORY

Created by: Brandon Baldwin
Updated by: Brandon Baldwin

Canino School of Engineering Technology
Department: AUTOMOTIVE TECHNOLOGY
Semester/Year: SPRING 2018
A. **TITLE**: Engine Performance I Laboratory

B. **COURSE NUMBER**: AUTO 114

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, while testing systems with digital volt/ohm meters and computer scanners. Fuel and powertrain control systems are diagnosed with the latest tools available. With the completion of both components of Engine Performance I, (AUTO 113 and AUTO 114) students will be able to diagnose and repair a vehicle with a no-start condition resulting from a fuel or ignition problem. The student will be able to access vehicle computer information, including inputs, outputs, and miscellaneous tests.

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

AUTO 101 or MSPT 101, and AUTO 112

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

AUTO 113
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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<tbody>
<tr>
<td>Demonstrate knowledge and understanding of distributor ignition systems</td>
<td>ALO1, ALO2</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
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<tr>
<td>Demonstrate procedures necessary in servicing engine ignition systems</td>
<td>ALO1, ALO2</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
</tr>
<tr>
<td>Demonstrate knowledge and understanding of engine fuel injection systems, both mechanical and electronic.</td>
<td>ALO1, ALO2</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
</tr>
<tr>
<td>Demonstrate procedures necessary in servicing fuel injection systems.</td>
<td>ALO1, ALO2</td>
<td>2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO</td>
<td>CA IA PS Subsets</td>
</tr>
<tr>
<td>Apply electrical knowledge to engine performance sensors and the modules that control them.</td>
<td>ALO1, 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>Interpret scan tool data to diagnose engine performance problems</td>
<td>ALO1, 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>KEY</td>
<td>Institutional Student Learning Outcomes [ISLO 1 – 5]</td>
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<tr>
<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
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</tbody>
</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

K. - **TEXTS:**

NATEF Standards Job Sheets, Engine Performance by Jack Erjavec

L. - **REFERENCES:**

ShopKeyPro, AllData, Subaru STIS

M. - **EQUIPMENT:**

None ☐ Needed: Snap-On Scanners, student tool list

N. - **GRADING METHOD:**

A-F

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

lab practical, lab performance

P. - **DETAILED COURSE OUTLINE:**

1. - Orientation
   a. - Overview
   b. - Safety

2. - Use of Specification/Service Manuals - Assessment of Service/Repair Information
   a. - Introduction to manual usage
   1. - Manufacturer’s manuals
   2. - Aftermarket manuals
   b. - CD Rom, All data, GM Electronic Service Training
   c. - Simulate no start use of service manuals/CD Rom to diagnose

3. - Ignition Theory of Operation
   a. - Ignition service safety
   b. - Identification and testing of system components
   c. - Primary/Secondary circuit testing and service
   d. - Timing and test adjustment with electronic controls

4. - Ignition Timing
a. Component location
b. Distributor removal and reinstallation
c. Breaker point and solid state overhaul procedures
d. Static timing

5. Electronic Circuit Review
   a. Electrical Safety
   b. Tracing specific circuits
   c. Specifications and service procedures
   d. Trouble shooting
   e. Wire/connector Repair

6. Electronic Engine Control
   a. Troubleshooting principles
   b. Electronic system service procedures (testing inputs with DVOM)
   c. Self-diagnostic systems
   d. Manufacturer-specific systems testing
   e. Automatic system testers (scanners)

7. Performance Testing
   a. Live skills performance oriented test
   b. Note: performance test will be given randomly

8. Fuel Delivery Systems
   a. Fuel infection systems orientation
   b. Fuel pump testing-pressure/volume
   c. Fuel injector balance and resistance
   d. Testing fuel pump current draw

9. Computer Scanning
   a. Inputs and outputs (different scan tools)
   b. Miscellaneous tests
   c. Oxygen sensor diagnostics

10. Compression Testing, Cylinder Leakage
    a. Compression testing - wet/dry
    b. Use of Snap-On Leak Detector
    c. Problem Analysis

Q. LABORATORY OUTLINE: None ☒  Yes ☐

This is a laboratory class.