

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: AER 2895C

COURSE TITLE: Engine Performance III

PREREQUISITE(S): AER 2892 and AER 2695C

COREQUISITE(S): None

CREDIT HOURS: 4

CONTACT HOURS/WEEK: 6

CONTACT HOUR BREAKDOWN:

Lecture/Discussion: 4

Laboratory: 2

Other _____:

FACULTY WORKLOAD POINTS: 5

STANDARDIZED CLASS SIZE ALLOCATION: 24

COURSE DESCRIPTION:

This course is an advanced study of automotive diagnostic equipment and techniques. Students are expected to have a basic knowledge of electrical systems, engine operation, fuel systems and engine performance prior to enrolling. This course will concentrate on electronic engine controls including fuel injection, feedback systems, and computer controlled engine management systems. Students enrolled in Dealer Specific programs (GM ASEP) will work with manufacturer supplied curriculum and vehicles. Both classroom and laboratory will be provided.

SUGGESTED TEXT(S): Automotive Technology, 2nd e., Halderman

IMPLEMENTATION DATE: Fall Term, 1992 (931)

REVIEW OR MODIFICATION DATE: Fall Term, 1993 (941)
 Fall Term, 1998
 Spring Term, 1999
 Fall Term, 2002 (20031)
 Fall Term 2005 (20061)
 Fall Term 2008 (20091)

| COURSE TOPICS | <u>CONTACT HOURS PER TOPIC</u> |
|---|------------------------------------|
| I. Introduction | 3 |
| A. Tools | |
| B. Safety | |
| II. Diagnosis Process Checks | |
| A. Strategy Based Diagnostics | |
| B. OBD II Diagnostics | 7 |
| III. Diagnosis Trouble Code Retrieval | 7 |
| IV. Technology Service Bulletins (TsBs) and Scan Tool Data | 7 |
| V. Advanced Starting and Charging Systems Diagnosis | 7 |
| VI. Ignition System Diagnosis | 7 |
| VII. Engine Fuels and Drivability Diagnosis | 7 |
| VII. Computer Sensor Testing | 7 |
| IX. Computerized Carburetor Diagnosis | 7 |
| X. Emission Control Device Diagnosis | 7 |
| XI. 5-Gas Exhaust Analysis | 7 |
| XII. Engine Condition Diagnosis | 8 |
| XII. Symptom-Based Diagnosis | 9 |
| Total | 90 |

PROGRAM TITLE: Automotive Service Management Technology

COURSE TITLE: Advanced Engine Performance

CIP NUMBER: 0615.080300

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

01.0 DEMONSTRATE AN UNDERSTANDING OF AUTOMOTIVE MECHANICS -- The student will be able to:

- 01.11 Demonstrate use of technical manuals, specification handbooks and charts.
- 01.21 Demonstrate an understanding of basic ignition and fuel systems.
- 01.35 Demonstrate an understanding of advanced electronics concepts.
- 01.36 Demonstrate an understanding of electronic schematic diagrams and diagnostic techniques.
- 01.40 Demonstrate an understanding of electronic microprocessor concepts, functions and components.

02.0 APPLY ELECTRICAL AND ELECTRONIC SKILLS IN DIAGNOSING\TROUBLESHOOTING MALFUNCTIONS OF ELECTRICAL/ELECTRONIC COMPONENTS -- The student will be able to:

- 02.20 Diagnose engine malfunctions.

06.0 DEMONSTRATE PROFICIENCY IN ENGINE PERFORMANCE SERVICE -- The student will be able to:

- 06.01 Analyze engine performance.
- 06.04 Check the performance of engines equipped with on-board computers.
- 06.07 Check the distributor advance in a vehicle.
- 06.08 Remove distributor; inspect, test and service.
- 06.09 Inspect and test primary circuits.
- 06.14 Service electronic ignition system.
- 06.17 Measure fuel flow and pressure.
- 06.26 Service throttle body fuel injection systems.
- 06.27 Service ported fuel injection systems.
- 06.34 Diagnose mechanical, ignition and fuel emission problems.
- 06.38 Diagnose and correct malfunctions in computer control systems.
- 06.39 Diagnose, test and replace on-board computer controls.
- 06.40 Diagnose, service and replace computerized sensors.
- 06.45 Test exhaust emissions using a four gas analyzer.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

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| <i>Section 1</i> | |
| COURSE PREFIX AND NUMBER: <u>AER 2895C</u> | SEMESTER CREDIT HOURS: <u>4.0</u> |
| COURSE TITLE: <u>Engine Performance III</u> | |

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

| | | |
|---|--|--|
| <input type="checkbox"/> AA Elective | <input checked="" type="checkbox"/> AS Required Professional Course | <input type="checkbox"/> College Prep |
| <input type="checkbox"/> AS Professional Elective | <input checked="" type="checkbox"/> AAS Required Professional Course | <input type="checkbox"/> Technical Certificate |
| <input type="checkbox"/> Other _____ | | |
| <input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7) | | |

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

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|---|---|--------------------------------------|
| <input type="checkbox"/> Communications | <input type="checkbox"/> Social & Behavioral Sciences | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Natural Sciences | <input type="checkbox"/> Humanities | |

Section 4

INTELLECTUAL COMPETENCIES:

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|---|---|--|---|--|
| <input checked="" type="checkbox"/> Reading | <input checked="" type="checkbox"/> Speaking | <input checked="" type="checkbox"/> Critical Analysis | <input checked="" type="checkbox"/> Quantitative Skills | <input checked="" type="checkbox"/> Scientific Method of Inquiry |
| <input checked="" type="checkbox"/> Writing | <input checked="" type="checkbox"/> Listening | <input checked="" type="checkbox"/> Information Literacy | <input type="checkbox"/> Ethical Judgment | <input checked="" type="checkbox"/> Working Collaboratively |

| | LEARNING OUTCOMES | METHOD OF ASSESSMENT |
|---|--|---|
| • | 01.0 DEMONSTRATE AN UNDERSTANDING OF AUTOMOTIVE MECHANICS. see attached framework | Written test, NATEF Authentic Task Observation (NATO) |
| • | 02.0 APPLY ELECTRICAL AND ELECTRONIC SKILLS IN DIAGNOSING\ TROUBLESHOOTING MALFUNCTIONS OF ELECTRICAL/ELECTRONIC COMPONENTS see attached framework | Written test, NATEF Authentic Task Observation (NATO) |
| • | 06.0 DEMONSTRATE PROFICIENCY IN ENGINE PERFORMANCE SERVICE see attached framework | Written test, NATEF Authentic Task Observation (NATO) |
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Section 6

Name of Person Completing This Form: Jeffrey Rehkopf Date: Oct 28, 2007