



Broward Community College Course Outline

STATUS: A

COMMON COURSE NUMBER: AER 2895C

COURSE TITLE: Advance Engine Performance

CREDIT HOURS: 4

CONTACT HOURS BREAKDOWN:

Lecture/Discussion 48

Lab 48

Other 84

Contact Hours/Week 16

CATALOG COURSE DESCRIPTION:

Prerequisite: None

Corequisite: None

A course designed to teach the latest in computer engine controls, electronic fuel injection systems, emission controls and electronic instrumentation systems. This course includes theory of operation and construction, trouble shooting and repair.

General Education Requirements - Associate of Arts Degree, meets Area(s):
General Education Requirements - Associate in Science Degree, meets Area(s):

UNIT TITLES:

1. Computer Engine Control Theory
2. Computer Engine Control System Repair
3. Electronic Fuel Injection Theory
4. Electronic Fuel Injection Repairs
5. Emission Control Theory
6. Emission Control System Repairs
7. Electronic Instrumentation Theory
8. Electronic Instrumentation Repair

I. Course Overview:

Upon successful completion of this course, the students should be able to discuss the latest developments in computer engine control, electronic fuel injection, emission control, and electronic instrumentation.

II. Units:

Unit 1. Computer Engine Control Theory

General Outcome:

1.0 The students should be able to discuss computer engine control systems.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

1.1 Identify the purpose and describe the construction and operation of a computer engine control system.

1.2 Identify each component and describe its relation to adjacent components.

1.3 Identify the various types of computer engine control systems now in use.

1.4 Describe how they differ in construction and operation.

1.5 Describe the On Board Diagnostic II (OBD II) system in the contents of the "Composite Vehicle" used in the ASE Advanced Engine Performance.



Unit 2. Computer Engine Control System Repair

General Outcome:

2.0 The students should be able to diagnose and correct computer engine control system malfunctions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

2.1 Identify the cause of malfunctions related to computer engine control systems.

2.2 Correct computer engine control system malfunctions by repairing or replacing system components as appropriate.

2.3 Identify, correct and clear the four type of codes used in the OBD II system.

Unit 3. Electronic Fuel Injection Theory

General Outcome:

3.0 The students should be able to discuss electronic fuel injection systems.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

3.1 Identify the purpose and describe the construction and operation of electronic fuel injection systems.

3.2 Identify each E.F.I. component and describe its relation to adjacent components.

3.3 Identify the various types of electronic fuel injection systems now in use.

3.4 Describe how E.F.I. Systems differ in construction and operation, using appropriate manuals and vehicle emission decals.



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Unit 4. Electronic Fuel Injection Repairs

General Outcome:

4.0 The students should be able to diagnose and correct electronic fuel injection system malfunctions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

4.1 Identify the cause of electronic fuel injection system malfunctions.

4.2 Correct electronic fuel injection systems malfunctions by repairing, adjusting or replacing system components as appropriate.

Unit 5. Emission Control Theory

General Outcome:

5.0 The students should be able to discuss emission control systems.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

5.1 Identify the purpose and describe the construction and operation of emission control systems.

5.2 Identify the elements of combustion and the products of combustion and discuss the effects of those by-products on the atmosphere.

5.3 Identify the devices used to control emissions.

5.4 Describe the construction and operation of devices used to control emissions.



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Unit 6. Emission Control System Repairs

General Outcome:

6.0 The students should be able to diagnose and correct emission control system malfunctions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

6.1 Identify the cause of emission control system malfunctions, using appropriate test equipment, including 5-gas analyzers

6.2 Repair, clean, adjust, or replace components in emission control systems, as appropriate, to meet manufacturer and government standards.

Unit 7. Electronic Instrumentation Theory

General Outcome:

7.0 The students should be able to discuss electronic instrumentation systems.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

7.1 Identify the purpose and describe the construction and operation of electronic instrumentation systems.

7.2 Identify each component and describe its relation to adjacent components.

7.3 Identify the various types of electronic instrumentation systems.



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Unit 8. Electronic Instrumentation Repair

General Outcome:

8.0 The students should be able to diagnose and correct electronic instrumentation system malfunctions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

8.1 Identify the cause of electronic instrumentation system malfunctions.

8.2 Repair or replace components in electronic instrumentation systems, as appropriate.