

Course Outline for NAUT CA8
CONCEPTS OF ENGINE PERFORMANCE
Effective: Fall 2021

I. CATALOG DESCRIPTION:
 NAUT CA8 — Noncredit

This class is lecture only and non-credit. Principles of automotive fuel induction, ignition and emission control systems, including inspection, diagnosis and repair of fuel and emission control systems/components governed by federal and state laws and standards. Electrical diagnosis of emission control systems. Relation of chassis and body systems to emissions.

Grading Methods:
 Pass/No Pass

Discipline:
 • Automotive Technology

Noncredit Category
 I - Short-Term Vocational

	MIN
Total Noncredit Hours:	54.00

II. PREREQUISITE AND/OR ADVISORY SKILLS:

III. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

- A. Distinguish and explain the different types of fuel delivery systems;
- B. Distinguish and explain the different types of ignition systems
- C. Formulate diagnostic patterns, and analyze gas readings to expedite proper repairs
- D. Explain theory and functionality of carburetors, throttle body, and port injectors;
- E. Explain safety procedures and the handling of hazardous waste materials;

IV. CONTENT:

- A. Different types of fuel delivery systems.
 - 1. Describe functionality of Carburetors
 - 2. Describe advantages of Fuel injectors
- B. Different types of ignition systems
 - 1. Describe functionality of a points ignition systems
 - 2. Describe functionality of a high energy ignition systems
 - 3. Describe functionality of a coil over plug ignition systems
- C. Fuel systems testing
- D. Ignition System Testing
 - 1. Ignition Scope theory
- E. Diagnostic patterns, and analyze gas readings
 - 1. Execute diagnostic as described in service information systems
 - 2. Study and evaluate exhaust gas readings
- F. Diagnostic test equipment
 - 1. Identify proper tester for application
- G. Diagnostic information systems
 - 1. Access and extract diagnostic information.
 - 2. Research labor time guides for work determined in diagnostics.
- H. Explain theory and functionality
 - 1. List theory of air fuel flow of a carburetor
 - 2. Explain advantages of port injectors and related equipment
- I. Explain the difference in the three main automotive systems
- J. Handling of hazardous waste materials
- K. Professional environment

V. METHODS OF INSTRUCTION:

- A. **Lecture** -

VI. TYPICAL ASSIGNMENTS:

- A. Lecture based assignments
 - 1. Lecture on scanner operation
- B. Text reading assignments
 - 1. Read Chapter One

VII. EVALUATION:

Methods/Frequency

- A. Exams/Tests
monthly
- B. Quizzes
weekly

VIII. TYPICAL TEXTS:

1. Johanson, Chris. *Auto Engine Performance and Drivability*. 5 ed., Goodheart Wilcox, 2021.
2. Duffy, James. *Modern Automotive Technology*. 9 ed., Goodheart Wilcox, 2020.

IX. OTHER MATERIALS REQUIRED OF STUDENTS:

- A. Computer with Internet access