

COURSE OUTLINE

Revised By: B. Hughes July, 2007

DEPARTMENT:	Automotive Technology
CURRICULUM:	Automotive Technology
COURSE TITLE:	Advanced Drivability and Fuel Systems
COURSE NUMBER:	AUT 138
TYPE OF COURSE:	Vocational Preparatory
COURSE LENGTH:	Normally 4 weeks
CREDIT HOURS:	6
LECTURE HOURS:	20 hours
LAB HOURS:	80 hours
CLASS SIZE:	20 maximum
PREREQUISITES:	MVM 100 (Introduction to Automotive Technology I), MVM 102 (Introduction to Automotive Technology II), AUT 100 (Introduction to Electricity), AUT 102 (Advanced Electrical Systems), AUT 104 (Automotive Electronics), AUT 106 (Basic Power Accessories), AUT 134 (Introduction to Drivability), basic math skills, and 9 th grade or higher reading level (as evidence by appropriate placement test scores), and/or instructor permission.

COURSE DESCRIPTION:

Contents include: safety, laws of physics, engine design and operation, intake and exhaust systems, fuel tanks, fuel pumps fuel filters, carburetor design and operation, fuel injection design and operation, testing and adjusting engine mechanical systems, use of engine analyzers, as well as removal and installation of drivability components from vehicles. In addition the function and construction of each component, and their diagnosis and service procedures will be covered. Instruction in safety, environmental awareness, human relations and leadership are taught as an integral part of this unit.

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Critical Thinking – Use problem solving skills to diagnose and repair automotive drivability problems. (SLO 4.1)
2. Technology - Proper use and care of automotive tune-up tools and equipment. (SLO 5.1)

PROGRAM OUTCOMES:

1. Inspect, diagnose, disassemble, repair, replace and service each of the major systems in various types of vehicles. (SLO 4.1)
2. Locate sources, make parts write-ups, calculate costs and explain repair or service. (SLO 2.1, 2.2 & 7.1)
3. Handle customer needs, complaints, questions and special challenges. (SLO 3.1 & 3.2)
4. Access and apply manufacturer's specifications in repair and replacement. (SLO 7.1)
5. Work safely and responsibly within all shop safety and environmental guidelines and standards. (SLO 6.4 & 6.5)
6. Demonstrate ability to pass the ASE test required for NATEF certification. (SLO 1.1, 1.2 & 7.1)
7. Communicate and document service records. (SLO 2.1)
8. Compute costs, time and measurements. (SLO 2.1, 2.2 & 7.1)
9. Work independently and in groups to service, repair, test and maintain vehicles. (SLO 3.1 & 6.3)
10. Use technology to test vehicles. (SLO 5.1)
11. Work with accuracy, dependability, proficiency and in a timely manner, when servicing equipment. (SLO 6.3 & 6.4)

GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

1. Explain and demonstrate safety as it applies to the automotive industry.
2. Explain the laws of physics that apply to engine performance.
3. Explain engine design and its operation.
4. Explain how intake and exhaust systems affect engine performance..
5. Service fuel tanks, pumps and filters.
6. Explain, identify and service carburetors and fuel injection systems.
7. Demonstrate how to test and adjust engine mechanical systems.
8. Demonstrate how to use engine analyzers.
9. Demonstrate proficiency in NATEF competencies.

TOPICAL OUTLINE:

	APPROX. HOURS
I. Automotive safety	5
II. Laws of physics	5
III. Engine design and operation	5
IV. Intake and exhaust systems	5
V. Fuel tanks, pumps and filters	10
VI. Carburetors	10
VII. Fuel injection	15
VIII. Engine mechanical systems	15
IX. Engine analyzers (exhaust, ignition, scope and scan)	<u>30</u>
Total	100