

_____SOUTH SEATTLE COMMUNITY COLLEGE_____

Technical Education Division

COURSE OUTLINE

Revision: Doug Clapper-2012

DEPARTMENT:	Heavy Duty Diesel Technology
CURRICULUM:	Diesel and Heavy Duty Equipment Technology
COURSE TITLE:	Advanced Gasoline Engines
COURSE NUMBER:	HDM 191
TYPE OF COURSE:	Vocational Preparatory
COURSE LENGTH:	60 Hours
CREDIT HOURS:	4
LECTURE HOURS:	20
LAB HOURS:	40
CLASS SIZE:	18 Maximum
PREREQUISITES:	HDM 101 (Introduction to Heavy Duty) HDM 128 (Basic Gasoline Engines) or instructor's permission

COURSE DESCRIPTION:

In this unit, students will learn the theory and operation of fuel and ignition systems used on industrial gas engines commonly found in the heavy-duty industry. Common types of ignition and carburetion systems 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. Technology - Use tools and machines for engine repair.
2. Personal Responsibility - Maintain proper maintenance of shop area and individual lab area.

GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

- A. Understand the venturi principle
- B. Disassemble, clean, and reassemble a carburetor
- C. Troubleshoot a fuel system problem
- D. Perform preventive maintenance on a fuel system
- E. Identify the components of an ignition system
- F. Identify the types of ignition systems used on gas engines
- G. Remove and service ignition system components
- H. Troubleshoot an ignition system
- I. Perform preventive maintenance on an ignition system

TOPICAL OUTLINE:	APPROX. HOURS
I.Engine identification	4
II.Engine mechanical testing	5
III.Principles of carburetion	5
IV.Vacuum	5
V.Pressure	4
VI.Types of carburetors	4
VII.Circuits	4
VIII.Ignition system operation	4
IX.Coils	5
X.Spark plugs	5
XI.Magneto system	5
XII.Engine timing	5
XIII.Preventive Maintenance	<u>5</u>
TOTAL	60 Hours

Program Outcomes

1. Identify function, read diagrams and manufacturer specifications, inspect, diagnose problems, replace/repair, and service all major components of heavy duty equipment and vehicles. (SLO 1.1 & 7.2)
2. Using IVISDS sheets, OSHA and WISHA standards, demonstrate safety procedures relating to equipment, personal safety, and safety of others. (SLO 6.4)

3. Demonstrate proficiency in using hand and electronic testing and repair equipment. (SLO 6.3)
4. Consistently apply standards and guidelines for safe work procedures. (SLO 6.4 & 6.5)
5. Work independently and in groups to service, complete repairs, test, and maintain heavy duty vehicles to meet industry standards. (SLO 3.1)
6. Use industry tools to measure service. (SLO 2.2)
7. Use technology to test and repair equipment. (SLO 5.1)
8. Identify and strategize own career plans within the field. (SLO 6.2)
9. Practice good customer service. (SLO 3.2)
10. Work with accuracy, dependability, proficiency and speed when servicing equipment. (SLO 6.1)
11. Explain the expectations of employers for employees within the diesel industry. (SLO 7.1)
12. Communicate and document service records. (SLO 1.2)
13. Demonstrate basic competency in use of computers to access repair/replacement data and to document service. (SLO 5.1 & 7.1)

Student Learning Outcomes (SLO)

STUDENT LEARNING OUTCOMES are the knowledge and abilities every student graduating with a certificate or degree from South Seattle Community College will have. Students will achieve these outcomes as well as the specific curriculum outcomes for their academic or technical area of study.

1. Communication

- 1.1 Read and listen actively to learn and communicate.
- 1.2 Speak and write effectively for personal, academic and career purposes.

2. Computation

- 2.1 Use arithmetic and other basic mathematical operations as required by program of study.
- 2.2 Apply quantitative skills for personal, academic, and career purposes.
- 2.3 Identify, interpret and utilize higher level mathematical and cognitive skills (for those students who choose to move beyond the minimum requirements are stated above).

3. Human Relations

- 3.1 Use social interactive skills to work in groups effectively.
- 3.2 Recognize the diversity of cultural influences and values.

4. Critical Thinking and Problem-Solving

- 4.1 Think critically in evaluating information, solving problems and making decisions.

5. Technology

- 5.1 Select and use appropriate technological tools for personal, academic and career tasks.

6. Personal Responsibility

- 6.1 Be motivated and able to continue learning and adapt to change.
- 6.2 Value one's own skills, abilities, ideas and art.
- 6.3 Manage personal health and safety.
- 6.4 Be aware of civic and environmental issues.

7. Information Literacy

- 7.1 Access and evaluate information from a variety of sources and contexts, including technology.
- 7.2 Use information to achieve personal, academic, and career goals, as well as to participate in a democratic society.

REVISED BY: Doug Clapper
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