

**COURSE OUTLINE**

Revision: Doug Clapper – 2008

DEPARTMENT:	Heavy Duty Diesel Technology
CURRICULUM:	Diesel and Heavy Duty Equipment Technology
COURSE TITLE:	Steering, Suspension and Brakes
COURSE NUMBER:	HDM 138
TYPE OF COURSE:	Vocational Preparatory
COURSE LENGTH:	246 Hours
CREDIT HOURS:	15
LECTURE HOURS:	70
LAB HOURS:	176
CLASS SIZE:	18 Maximum
PREREQUISITES:	HDM 101 (Introduction to Heavy Duty) or instructor's permission

**COURSE DESCRIPTION:**

In this unit, students will study components and systems relating to truck or equipment running gear. Theory, operation, diagnosis and repair of wheels, tires, brakes, steering, and suspension systems will be covered in this class. Instruction in safety, environmental awareness, human relations and leadership are taught as an integral part of this unit of study.

**STUDENT LEARNING OUTCOMES ADDRESSED:**

1. Critical Thinking and Problem Solving - Diagnose and trouble-shoot tires, wheels and steering systems.
2. Technology - Use appropriate tools.
3. Personal Responsibility - Assess and value one's own skills.

## GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

1. Follow safe work procedures.
2. Properly inspect tires, wheels, and hubs for serviceability and perform necessary service.
3. Diagnose and make minor repairs to steering systems and components.
4. Diagnose and make minor repairs to equipment components.
5. Diagnose and perform preventive maintenance to construction equipment.
6. Diagnose suspension systems.
7. Make adjustments and repairs to truck and trailer suspension systems.
8. Identify components and parts of braking systems, including air brake application and release systems, hydraulic brake application and release systems, mechanical foundations, air brake preventive maintenance, hydraulic brake preventive maintenance and 121 brake systems.
9. Perform tasks at trade-accepted levels, including failure analysis of brake systems based on previously learned fundamentals.
10. Diagnosis and repair A.B.S. failures.
11. Access and interpret A.B.S. fault codes.

TOPICAL OUTLINE:	APPROX. HOURS
I. Safe work habits	9
II. Steering Systems	40
III. Suspension systems	40
IV. Wheels and tires	40
V. Truck brake systems	43
VI. Hydraulic brakes and air-over-hydraulic brake systems	50
VII. Air Brake servicing	<u>24</u>
TOTAL	246

## 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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