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BOT APPROVAL:
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EFFECTIVE TERM: Summer 2003

SAN DIEGO COMMUNITY COLLEGE DISTRICT
MIRAMAR COLLEGE
ASSOCIATE DEGREE COURSE OUTLINE

SECTION I

SUBJECT AREA AND COURSE NUMBER: Diesel Technology 200

COURSE TITLE: Mobile Hydraulic Systems **Units:** 3
Grade Only

CATALOG COURSE DESCRIPTION:

This Heavy Duty Transportation (HDT) and Heavy Equipment Technology (HET) course covers the principles and practices involved in operating and servicing mobile hydraulic systems and components. These systems and components include reservoirs, pumps, actuators, valves, piping, and fittings. Students learn how to use standard industry procedures, hydraulic schematics, and test equipment for diagnosing, analyzing, and repairing HDT mobile hydraulic systems and components.

REQUISITES:

Corequisite: Completion of or concurrent enrollment in:
DIES 100 with a grade of "C" or better, or equivalent

FIELD TRIP REQUIREMENTS: May be required

TRANSFER APPLICABILITY: Associate Degree Credit & transfer to CSU and/or private colleges and universities

TOTAL LECTURE HOURS: 32 - 36

TOTAL LAB HOURS: 48 - 54

STUDENT LEARNING OBJECTIVES:
Upon successful completion of the course the student will be able to:

1. Analyze and explain the purpose of hydraulics
2. Examine and describe how mobile hydraulic systems and components operate
3. Demonstrate the ability to properly disassemble and reassemble hydraulic components
4. Prepare written records of repairs and lab activities including the evaluation of hydraulic components used in class
5. Use accepted industry tools and procedures to diagnose problems and assess the serviceability of hydraulic systems
6. Demonstrate the ability to read and understand International Organization for Standardization (ISO) hydraulic schematics
7. Evaluate and perform required maintenance on mobile hydraulic systems.

SECTION II

1. COURSE OUTLINE AND SCOPE:

A. **Outline Of Topics:**

The following topics are included in the framework of the course but are not intended as limits on content. The order of presentation and relative emphasis will vary with each instructor.

I. Organization and procedures
   A. Course content and instructional procedures
   B. Safe working procedures
   C. Project organization
   D. Handling components
   E. Special tools.
II. Fundamentals of hydraulics
   A. Fluids, reservoirs, screens, and filters
   B. Lines, construction, and service
   C. Control and relief valves
   D. Linear actuators and hydraulic motors
   E. Basic systems and circuits
   F. Problem diagnosis of systems.

B. **Appropriate Outside Assignments:**
Outside assignments may include, but are not limited to, the following:

I. 1. Conducting research
II. 2. Completing all reading and writing assignments including a shop notebook and a written evaluation of hydraulic components
III. 3. Completing field assignments/projects.

C. **Writing Assignments:**
Writing assignments are required and may include, but are not limited to, the following:

I. 1. Completing assigned papers or reports including a shop notebook
II. 2. Responding to short answer/essay questions about the operation, maintenance, and repair of hydraulic systems and components
III. 3. Preparing written records of repairs and lab activities including a written evaluation of hydraulic components.

D. **Reading Assignments:**
Reading assignments are required and may include but, are not limited to, the following:

I. 1. Course texts and repair manuals
II. 2. Professional journals such as Heavy Duty Trucking, Service Tech, Fleet Owner, Maintenance Manager, Fleet Equipment, and Transportation Equipment News
III. 3. Laboratory guides associated with hydraulic systems and components.

E. **Appropriate Assignments that Demonstrate Critical Thinking:**
Critical thinking assignments are required and may include, but are not limited to, the following:

I. 1. Evaluating hydraulic components and formulating repair plans
II. 2. Analyzing and explaining the function of heavy duty transportation hydraulic systems and components
III. 3. Calculating and solving mathematical problems.

2. METHODS OF EVALUATION:

A student's grade will be based on multiple measures of performance unless the course requires no grade. Multiple measures may include, but are not limited to, the following:

I. Performing manipulative skills as needed to satisfactorily complete laboratory assignments Applying theory to laboratory assignments Performing on written, oral, and/or practical examinations Performing on out-of-class assignments including writing assignments Contributing to class discussions.

3. METHODS OF INSTRUCTION:

Methods of instruction may include, but are not limited to, the following:

* Lecture
* Lecture Discussion
* Computer Assisted Instruction
* Laboratory
* Discussion Seminar
* Lecture-Lab Combination
* Learning Modules
* Audio-Visual
* Collaborative Learning
* Other (Specify)
* 1. Demonstration
* 2. Field trips and/or field assignments
* 3. Laboratory assignments utilizing specifically planned instructional activities or "live" work.

4. REQUIRED TEXTS AND SUPPLIES:
Textbooks may include, but are not limited to:

TEXTBOOKS:
1. Lewis, Jim.. DIES-M Daily Reports, 2nd ed. Miramar Reprographics, 1976,
2. Vickers, Inc.. Vicker's Mobile Hydraulics Manual, 1st ed. Vickers, 1998, ISBN: 0963416251

MANUALS:

PERIODICALS:

SOFTWARE:

SUPPLIES:
1. Shop notebook (8 1/2" x 11" spiral bound)
2. Safety glasses
3. Calculator
4. Scantron answer sheets
5. Appropriate clothing and footwear for shop work

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CO-CONTRIBUTOR(S)
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