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# SAN DIEGO COMMUNITY COLLEGE DISTRICT
# MIRAMAR COLLEGE
# ASSOCIATE DEGREE COURSE OUTLINE

## SECTION I

**SUBJECT AREA AND COURSE NUMBER:** Diesel Technology 230

**COURSE TITLE:** Heavy Equipment Transmissions **Units:** 3
Grade Only

**CATALOG COURSE DESCRIPTION:**

This Heavy Equipment Technology (HET) course covers the principles and practices involved in operating and servicing heavy equipment torque converters and power-shift transmissions. Students also learn how to prepare written records of repairs using accepted industry specifications.

**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 torque converters and power-shift transmissions
2. Examine and describe how torque converters and power-shift transmissions operate
3. Identify how torque converters and power-shift transmissions are constructed
4. Assess and perform required periodic maintenance on torque converters and power-shift transmissions
5. Use accepted industry procedures and tools to diagnose problems and assess serviceability of torque converters and power-shift transmissions
6. Demonstrate how to properly disassemble and reassemble torque converters and power-shift transmissions
7. Prepare written records of repairs and lab activities.

## 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. Service procedures
   F. Special tools.

II. Power-shift transmissions
   A. Torque converters
   B. Hydraulic system
   C. Operation of controls
   D. Unit disassembly and assembly
   E. Service procedures
   F. Problem diagnosis.

B. **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 diesel technology.

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

I. 1. Evaluating power-shift transmissions and torque converters and formulating repair plans
II. 2. Analyzing and explaining the function of power-shift transmissions and torque converters
III. 3. Calculating and solving mathematical problems.

D. **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 power-shift transmissions and torque converters
III. 3. Completing field assignments/projects.

E. **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 power-shift transmissions and torque converters
III. 3. Preparing written records of repairs and lab activities including a written evaluation of power-shift transmissions and torque converters.

**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. Field trips or field assignments
* 2. 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. John Deere Inc.. Power Trains, 6th ed. John Deere, 1991, ISBN: 086691241X
2. Lewis, Jim.. DIES-M Daily Reports, 2nd ed. Miramar Reprographics, 1976,

**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

**ORIGINATOR:** James Cargill

**CO-CONTRIBUTOR(S)**
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