

# MESABI RANGE COMMUNITY & TECHNICAL COLLEGE

## Course Outline

**Course Title:** Power Transmission II  
**Semester Course Prefix and Number:** MEST 2272  
**Old Quarter Course Prefix and Number:**

**Submitted By:** Frank Malone  
**Approval Date:** April 2009  
**Revision Date:**

**Number of Credits:** 3  
**Semester(s) Offered:**  
**Class Size:** 24

**Number of Lecture Credits:** 1  
**Number of Lab Credits:** 2      **Number of Lab Hours:** 4  
**Number of Studio/Demonstration/Internship Credits:** 0

### Course Purpose Code:

- 0 – Developmental Courses
- 1 – Non-transferable, General Education
- 2 – Technical course related to career programs
- 3 – College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
- 4 – Other college course not considered a part of general education (MNTC) (e.g. computer science, health, physical education)
- 5 – Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTC) requirements or intended for transfer.
- 9 – Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

### Catalog Description:

The purpose of this course is to introduce the student to the study of mechanical power transmission. Areas of study will include gear types and their relation to torque, drive axles, final drives, manual clutches, manual transmissions (gear boxes), and drive lines. The student will learn to service and repair these systems safely and properly.

### Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): MEST 1246 Safety and Rigging  
MEST 1245 Mobile Equipment Fundamentals  
MEST 2270 Power Transmission I

Reading Prerequisite:

Composition Prerequisite:

Mathematics Prerequisite:

### Career Programs and Transfer Majors Accessing this Course:

Mobile Equipment Service Technician

### Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable:

(Notes: No more than two goals may be met by any one course. Curriculum Committee review and the Chief Academic Officer's approval are required.)

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|--|--|
| 0. <input checked="" type="checkbox"/> None                                | 6. <input type="checkbox"/> The Humanities and Fine Arts     |
| 1. <input type="checkbox"/> Communications                                 | 7. <input type="checkbox"/> Human Diversity                  |
| 2. <input type="checkbox"/> Critical Thinking                              | 8. <input type="checkbox"/> Global Perspectives              |
| 3. <input type="checkbox"/> Natural Sciences                               | 9. <input type="checkbox"/> Ethical and Civic Responsibility |
| 4. <input type="checkbox"/> Mathematical/Logical Reasoning                 | 10. <input type="checkbox"/> People and the Environment      |
| 5. <input type="checkbox"/> History and the Social and Behavioral Sciences |  |

**Learning Outcomes:** (including any relevant competencies listed in the Minnesota Transfer Curriculum)

Upon completion of this course, the student will be able to:

- 1.) Demonstrate proper safety procedures.
- 2.) Identify the various types of gears used in mobile equipment applications.
- 3.) Perform related math calculations. ( gear ratios, gear speed, gear pitch, and torque multiplication)
- 4.) Explain the relationship between torque and speed through various gear combinations.
- 5.) Identify the various types of clutches and flywheels used in mobile equipment.
- 6.) Identify various hydrostatic drive components.
- 7.) Identify the major components in a typical hydrostatic transmission.
- 8.) Trace power flows through hydrostatic transmissions.
- 9.) Explain the importance of lubricant selection for hydrostatic drive components.
- 10.) Explain the importance of preventive maintenance inspections for hydrostatic drive components.
- 11.) Explain the fundamentals of hydraulic drive trains.
- 12.) Demonstrate the proper maintenance procedures for hydrostatic drives.
- 13.) Identify the components of the power shift transmissions used in mobile equipment.
- 14.) Explain the operation of the power shift transmissions differentials used in mobile equipment.
- 15.) Explain the maintenance and adjustment procedures power shift transmissions for used in mobile equipment.
- 16.) Explain the purpose of power shift transmissions drives used in off road mobile equipment.
- 17.) Identify the construction features of power shift transmissions.
- 18.) Perform routine diagnostics for hydrostatic drive components.
- 19.) Demonstrate proper use of hand tools, power tools, and other related specialty tools.
- 20.) Perform tasks cooperatively

**Student Assessment Methods:**

Homework, Lab Assignments, Hands-on Tests, Written Tests

**Use of Instructional Technology:** (includes software, interactive video and other instructional technologies):

PowerPoint Presentations, Video Presentations, Equipment Specific Diagnostic Software, Digital Multi-Meters, Personal Computers, Internet.

**Outline or Statement of Major Course Content:**

See Course Description above

**Additional Special Information:** (special fees, directives on hazardous materials, etc.)

None

**Transfer Information:** (Please list colleges/majors that accept this course in transfer.)

**Approvals:**

Body	Representative Signatures	Date
Academic Affairs Standards Committee		
Chief Academic Officer		

**Distribution:** Original – Administrative Office

**Copies:** Curriculum Committee Chair, AASC Chair, Transfer Specialist, Originating Faculty Member, Scheduler, Records, Student Services, Learning Center, Library

**Revised:** October 2006