

# Minnesota State College Southeast

## MECH 1700: Mechanical Power Transmission

### A. COURSE DESCRIPTION

Credits: 2

Lecture Hours/Week: 1

Lab Hours/Week: 2

OJT Hours/Week: \*.\*

Prerequisites:

This course requires the following prerequisite

MECH 1610 - Basic Industrial Controls

Corequisites: None

MnTC Goals: None

This course will introduce students to various types of mechanical power transmission systems. As the student is introduced to the various systems, they will study the design, operation and maintenance of these systems. The students will perform labs that will demonstrate their ability to install and troubleshoot mechanical transmission systems including belts, gears, shafts and couplings. Motor mounting and alignment including the alignment of system components are an emphasis of this course. Prerequisite: MECH1610 (2 Credits: 1 lecture/1 lab)

**B. COURSE EFFECTIVE DATES:** 01/13/2020 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Motor Mounting and Alignment
2. Keys and Fasteners
3. Shafts and Bearings
4. Belt Drive Systems
5. Chain Drive Systems

#### **D. LEARNING OUTCOMES (General)**

1. Describe lockout/tagout
2. Perform lockout/tagout
3. Analyze electric motor mounting
4. Mount an electric motor
5. Troubleshoot an incorrectly mounted motor
6. Describe different types of keys
7. Install keys of different varieties
8. Identify shafts by size and material
9. Install a shaft
10. Explain lubrication purposes
11. Explain lubrication techniques
12. List types and purposes of anti-friction bearings
13. Install and adjust a bearing
14. Install and align two shafts
15. Calculate pulley ratio
16. Install and align a V-belt
17. Determine the proper tension for a V-belt
18. Adjust V-belt tension
19. Calculate Sprocket Ratio
20. Install and align a chain system
21. Determine the correct chain tension
22. Adjust a chain system for correct sag
23. Explain types and usages of various drive belts
24. Differentiate various types of gear drives
25. List various types of couplings
26. Design drive system
27. Analyze the causes of excessive vibration
28. Analyze misalignment hazards
29. Calculate gear ratios
30. Install and align a spur gear system
31. Measure gear backlash
32. Adjust gear backlash

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted