



South Central College

MECA 2123 Mechanical Systems 2

Course Outcome Summary

Course Information

Description	This course includes an introduction to mechanical drives, bearing mechanisms, shaft alignment, shaft coupling, clutches and brakes. Also included is an introduction to industrial rigging using slings, hoists, cranes, scaffolds and ladders. Troubleshooting of mechanical systems will be emphasized. Technical writing skills and safety procedures will be implemented throughout the course. (Prerequisite: MECA 1223 and PHYS 101 or equivalent.)
Total Credits	3
Total Hours	64

Types of Instruction

Instruction Type	Credits/Hours
Lecture	2/32
Lab	1/32

Pre/Corequisites

MECA 1223

PHYS 101 or equivalent.

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

- Describe, analyze and demonstrate understanding of the proper use, installation and maintenance of belt and chain drives.**

Learning Objectives

Identify terms and components used in belt and chain drives.

Analyze speed and torque ratios of belt and chain drives.

Demonstrate proper installation and maintenance of belt and drive chains.

2. Describe, analyze and demonstrate understanding of the proper use, installation and maintenance of gears and gear drives.

Learning Objectives

Identify terms and components used in gear drives.
Analyze speed and torque ratios of commonly used gear drives.
Demonstrate proper installation and maintenance of gear drives.

3. Describe the various methods to align shafts and means of dealing with shaft misalignment.

Learning Objectives

Identify terms, components and instruments used in association with shaft alignment.
Identify common shaft coupling components.
Demonstrate proper installation and maintenance of shaft coupling devices.
Demonstrate proper procedures to align two shafts.
Describe ways to change material properties of shafts.

4. Describe and demonstrate understanding of the proper use, installation and maintenance of clutches and brakes.

Learning Objectives

Identify terms and components used in clutches and brakes.
Explain the purpose of clutches and brakes.
Analyze torque developed from a brake.
Demonstrate proper installation and maintenance of clutches and brakes.

5. Describe and demonstrate understanding of the proper use, installation and maintenance of ball screws.

Learning Objectives

Identify terms and components used in ball screws.
Explain the reasons for ball screw use.
Demonstrate proper installation and maintenance of ball screws.

6. Recognize and analyze the motion of commonly used mechanisms.

Learning Objectives

Identify commonly used mechanisms.
Analyze the kinematic motion of commonly used mechanisms.
Describe linear-to-rotary mechanisms.

7. Demonstrate proper and safe use of slings.

Learning Objectives

Identify sling designs used in industrial rigging.
Calculate sling loads.
Identify typical and special-purpose hooks used when rigging a load.

8. Demonstrate proper and safe use of hoists and cranes.

Learning Objectives

Describe hoist designs used in industrial rigging.
Describe crane designs used in industrial rigging.
Describe preventative maintenance and inspection techniques for hoist and cranes.

9. Demonstrate proper and safe use of scaffolds and ladders.

Learning Objectives

Identify types of scaffolds used in industry.
Identify types of ladders and the proper application of each ladder design.
Describe scaffold safety and safety equipment.
Describe ladder safety.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

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