

Course discipline/number/title: CAD 2358: Machine Design

A. CATALOG DESCRIPTION

1. Credits: 5
2. Hours/Week: 2 lecture, 6 lab
3. Prerequisites (Course discipline/number): CAD 1123, CAD 1147, CAD 1150, CAD 1222, CAD 1323
4. MnTC Goals (if any): NA

This course covers mechanisms used to transmit rotary motion and power. Content will include design information about gears, belts, pulleys, and chain drives. Students will design power transmission projects beginning with ideas then producing layout, detail, and assembly drawings. Students will work in small groups similar to industrial practices. They will learn to use vendor's information from the internet, assign part numbers, and generate bills of materials. This course will be taught in a state-of-the-art facility featuring the latest release of SolidWorks. Students must receive a grade of C or better in all prerequisite courses.

B. DATE LAST REVISED (Month, year): October, 2017

C. OUTLINE OF MAJOR CONTENT AREAS:

1. General introduction
 - a) Motion
 - b) Velocity and speed
 - c) Work and power
2. Spur gearing, chain, and belt drives
3. Other gear types
4. Flexible power transmission elements
5. Variable speed drives and transmissions
6. Bearings
7. Shafting
8. Couplings
9. Team projects for gears, belts, pulleys, and chain drives

D. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Calculate speed ratios.
2. Interpret vendor catalogs and Internet catalogs.
3. Draw spur gears, calculate spur gear data and draw.
4. Draw belt & pulley systems.
5. Determine bearing applications.
6. Select chain and belt drives.
7. Create detailed drawings.
8. Create welding drawings.
9. Create assembly drawing.
10. Plan and give oral presentations.
11. Work in teams to create prototypes.

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:

Methods may include but not limited to:

1. Tests
2. Quizzes
3. Drawings
4. Create prototype projects
5. Oral presentations



- G. RCTC CORE OUTCOME(S) ADDRESSED:
Personal and Professional Accountability. Students will take responsibility as active learners for achieving their educational and personal goals.

- H. SPECIAL INFORMATION (if any): None