

- Course Number and Title: M E 425. Design of Machine Elements
- Catalog Description: Design and analysis of machinery for load-bearing and power transmission by considering material failure modes such as yielding, fracture, and fatigue. Design and selection of machine elements including threaded fasteners, springs, rolling-element bearings, cams, gears and friction drives.
- Credit Hours: 3 Credits (3)
- Prerequisite(s) / Corequisite(s): Prerequisite(s): M E 326
Corequisite(s): None
- Required: Required for BSME Degree
- Course Availability: Fall and Spring Semesters
- Instructor (Usual): Dr. Vincent Choo (See <https://mae.nmsu.edu/people/faculty.html>)
- Textbook: Budynas, R.G., and Nisbett, K., *Shigley's Mechanical Engineering Design*, 11th ed., McGraw Hill, 2019 (ISBN-13: 978-0073398211)
- Course Learning Objectives: After completing this course, a student should be able to:
 - 1) Apply design methods for designing and prototyping of machine elements.
 - 2) Recognize the design process, breakdown this complex process into a series of simple tasks, carry out these simple tasks to achieve the desired design.
 - 3) Apply the industrial specifications and requirements regarding the design of machine elements.
 - 4) Implement these knowledge and experiences into real-world engineering projects with finite element method.
- Topics Covered:
 - An overview of mechanical design
 - Geometric dimensioning and tolerancing
 - Materials, load and stress analysis
 - Deflection and stiffness
 - Static and fatigue failure prevention
 - Design of shafts, bearings, gears, and power transmission