

TO: The Engineering Faculty

FROM: The Faculty of the School of Mechanical Engineering

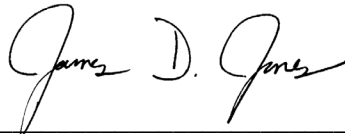
RE: New Course - ME 35400 Machine Design

The Faculty of the School of Mechanical Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ME 35400 Machine Design, Sem. 1, 2, SS, Class 3, cr. 3. Prerequisites: ME 26300, ME 27400, and ME 32300 or equivalents.

Design, analysis, and selection of machine components for fluctuating loading. Application of design fundamentals to mechanical components and integration of components to form systems. Open-ended design projects reinforce the design process.

Reason: This course has previously been a restricted elective (ME 45200 Machine Design II) in our ME UG Program. The faculty have decided to remove the current ME 35200 Machine Design I (which covers different topics) and make this the new course ME 35400 Machine Design I (which is a re-numbered and re-constituted ME 45200) part of the core ME curriculum in its place in addition to a separate 1 cr lab. The faculty believe that the topics covered in these new courses (the lecture and lab) are more central to the needs of mechanical engineering graduates. Details of this new course are outlined in the appended material below.

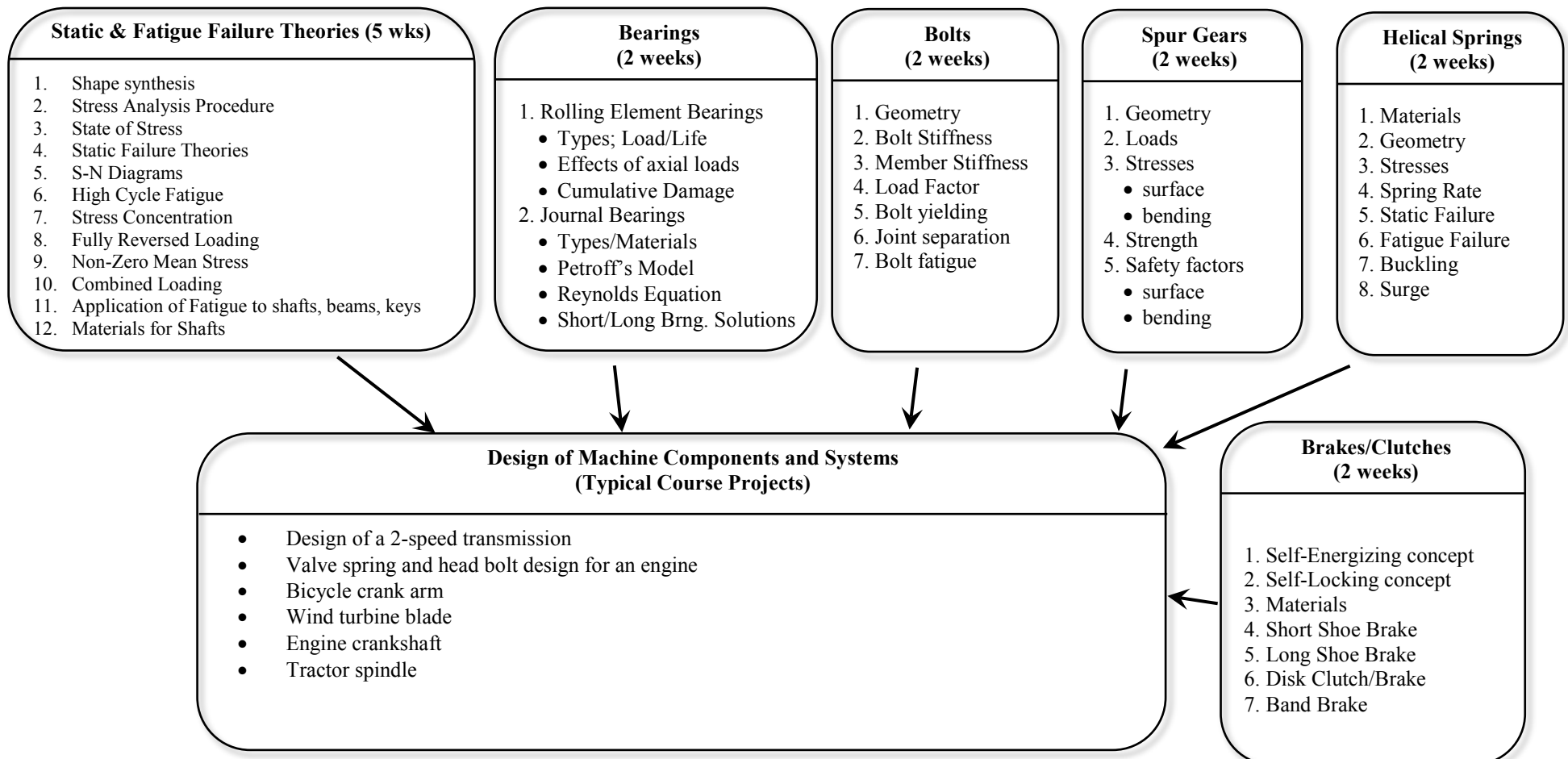


James D. Jones, Associate Professor and Associate Head
School of Mechanical Engineering

**ME 35400
MACHINE DESIGN**

Course Outcomes [Related ME Program Outcomes in brackets]

1. Apply Statics, Dynamics, and Strength of Materials to the realization of machine components. [1, 2]
2. Understand fatigue failure mechanisms [1]
3. Apply fatigue failure theories to create reliable mechanical components. [1, 2]
4. Select standard machine components and materials. [2]
5. Enhance problem-solving and communication skills through design projects. [3]



COURSE NUMBER: ME 35400		COURSE TITLE: Machine Design (3 credits)	
REQUIRED COURSE OR ELECTIVE COURSE: Required		TERMS OFFERED: Fall and Spring	
TEXTBOOK/REQUIRED MATERIAL: R.G. Budynas and J. Keith Nisbett, <i>Shigley's Mechanical Engineering Design</i> , 10 th ed, McGraw-Hill, 2015.		PRE-REQUISITIES: ME 263 Introduction to Mechanical Engineering Design, Innovation, and Entrepreneurship ME 274 Basic Mechanics II ME 323 Mechanics of Materials	
COORDINATING FACULTY: TBD		COURSE OUTCOMES [Related ME Program Outcomes in brackets]: 1. Apply Statics, Dynamics, and Strength of Materials to the realization of machine components. [1, 2] 2. Understand fatigue failure mechanisms. [1] 3. Apply fatigue failure theories to create reliable mechanical components. [1, 2] 4. Select standard machine components and materials. [2] 5. Enhance problem-solving and communication skills through design projects. [3]	
COURSE DESCRIPTION: Design, analysis, and selection of machine components for fluctuating loading. Application of design fundamentals to mechanical components and integration of components to form systems. Open-ended design projects reinforce the design process.			
ASSESSMENTS TOOLS: 1. Weekly homework. 2. Design project reports. 3. Exams and Class Tests.		RELATED ME PROGRAM OUTCOMES: 1. Engineering fundamentals 2. Engineering design 3. Communication skills 4. Ethical/Prof. responsibilities 5. Teamwork skills 6. Experimental skills 7. Knowledge acquisition	
NATURE OF DESIGN CONTENT: Design of machine components such as shafts, keys, gears, journal bearings, springs, brakes, and clutches, and selection of components such as roller element bearings to meet machine performance requirements.			
PROFESSIONAL COMPONENT: 1. Engineering Topics: Engineering Science – 50% Engineering Design – 50%			
COMPUTER USAGE: The design projects require students to write computer programs to conduct analysis studies.			
COURSE STRUCTURE/SCHEDULE: Lecture - 3 days per week at 50 minutes			
PREPARED BY: Jitesh Panchal		REVISION DATE: December 18, 2019	