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MENG 3309 – Mechanical Systems Design
Course Syllabus

Semester / Year	Spring 2026
Catalog Description	Characterization, design, selection, and integration of mechanical systems and components including shafts, gears, springs, mechanical fasteners, clutches, and brakes. Three hours of lecture per week.
Prerequisites	MENG 3306/CENG 3306 (C or better), and MENG 3319
Section Number	030
Instructor Name	Dr. Ermias Gebrekidan Koricho
Contact Information	Email: ekoricho@uttyler.edu Phone: 903-730-3895 Office: A220
Class Type / Instruction Mode / Location	Face to face / Lecture/ HEC Ctr 0C204
Class Time	Tuesday and Thursday 9:30AM - 10:50AM
Office Hours	Tu/Th 11:30 AM – 01:00 PM or by appointment
No. of Credits	3 credits
Required Textbook	McGraw Hill Connect - Budynas and Nisbett, Shigley's Mechanical Engineering Design, 11th Edition
Optional References	Robert L. Norton, Machine Design: An Integrated Approach, 5th ed
Additional Rules and Requirements	Students may discuss their homework solutions with one another, but each student must submit their own, independent solution (i.e. you may not just copy someone else's homework. Students can use AI programs (ChatGPT, Copilot, etc.) in this course. If you utilize an AI tool to help create content for an assignment, you must acknowledge and cite the tool's contribution to your work. Since the mechanical engineering program is designed to prepare students for professional practice, all submitted work (e.g., homework, lab reports, projects, presentations) is expected to meet professional standards. Work that does not reflect professional quality may be subject to grade reductions, even if professionalism is not explicitly listed in the grading rubric.
Evaluation Method	Test I 15% Test II 15% Test III 15% Final Exam 15% Attendance / Participation[1] 5% Homework[1] 5% Quizzes[1] 10% Project [2] 20%

	[1]There will be several homework assignments that are directly related to classroom discussion and test material. Everybody is required to attend all the classes. There will be both announced and unannounced quizzes. These quizzes cannot be made up in any circumstances. [2]Detail information about the project will be delivered later.
Grading Policy / Scale	Letter grades, scale: A: 90 – 100; B: 80 – 89; C: 70 – 79; D: 60 – 69; F: < 60
Important Events / Dates	Census date: 01/26/2026 First drop for non-payment: 02/04/2026 Last date to withdraw: 03/30/2026 Exam date: Test 1 (February 12, 2026), Test 2 (March 05, 2026), Test 3 (April 02.2026) Final Exam (April 30, 2026) The exam dates for the tests are tentative.
Attendance / Makeup policy / other rules	Regular attendance is required. In case you have to miss a class, it is your responsibility to keep up with the class work and be informed of all announcements made in the class. **Homework Assignments:** homework will be assigned according with the topics covered in lectures. Assignments are considered very important for the understanding of the course material. Completing your homework independently is an absolute necessity to do well in this course. **Canvas:** Course syllabus, course material such as handouts and example problems with solutions, homework, assignments, homework solutions, review material will all be posted on Canvas. Please review all the material posted on Canvas on a regular basis.
Course Learning Objectives / ABET & PEOs Relation	Upon completion of this course, the students will be able to: 1. Determine the stress, strain and deflection of machine elements. 2. Design for combined stresses and stress concentration. 3. Design to avoid fatigue failure against fully reversed and fluctuating cyclic loads. 4. Design of multi-step shafts and calculation of their critical speed. 5. Select bearings based on design parameters.
Tentative Topics / Course Plans	1. Mechanics of Materials (Revision): Introduction, Materials, Load and stress analysis 2. Static failure theories 3. Fatigue failure theories 4. Shafts and shaft components 5. Gears Stress Analysis (Gear general will be covered as flipped assignment)

	6. Mechanical Spring 7. Screws, fasteners & design of non-permanent joints 8. Clutches and Brakes, 9. Welding Design (Flipped Assignment)
University Policies	https://www.uttyler.edu/offices/academic-affairs/files/syllabus-information-rev122025.pdf

Note:

The instructor reserves the right to modify the syllabus at any time during the semester to accommodate unforeseen circumstances, enhance the learning experience, or ensure the course objectives are met. Any changes will be communicated promptly to all students.