KENNESAW STATE UNIVERSITY

SYLLABUS
KSU/ SOUTHERN POLYTECHNIC COLLEGE
DEPARTMENT OF ENGINEERING TECHNOLOGY
MET 4501: MACHINE DESIGN
SPRING 2025

Course Information

Class meeting time: TR 5:00-6:15
Modality and Location: Face to Face - Q109

Instructor Information

Name: Dr. Leah Ginsberg
Email: lginsber@kennesaw.edu
Office Hours: TR 3:30-5:00 (location TBD), or by appointment.
Preferred method of communication: lginsber@kennesaw.edu

Course Description

3 Class Hours - 0 Laboratory Hours - 3 Credit Hours
Prerequisites: EDG 1212 and (ENGR 3122 or MET 3126) and MET 3132

The design of machines and machine elements, and cost considerations. The course focuses on power transmission in machines including gears, belts, pulleys, bearings, lubrication, clutches, brakes, chains, power screws, and gear trains. Stress calculations and material selection are discussed. Broad design issues such as safety, ethics, patents, product liability, time value of money, return on investment, and break even analysis are covered. Students start design teams for the capstone senior design project.

Course Materials

Required: Shigley's Mechanical Engineering Design, 11th edition, by R. G. Budynas and J. K. Nisbett, McGraw-Hill, Jan 2019.

Additional reading material or links to reading material may be found on the course website.
Recommended Texts: *Machine Elements in Mechanical Design,* by Robert L. Mott, 6th Ed. Pearson, Prentice Hall.

Technology requirements: 8" x 5" x 11" green engineering grid paper

Course Learning Outcomes

Students completing this course will develop an understanding of fundamentals and application of the following topics:

1. Calculating the two-dimensional deflection of beams using a series representation modified for discontinuities.
2. Determining limit loads, residual stresses and permanent strains due to twisting and bending an elastic-perfectly plastic shaft.
3. Applying theories of failure appropriate to yield and fatigue for design envelopes.
4. Becoming familiar with the concept, design and analysis of the more common machine elements.
5. Combining common machine elements to form a power train.
6. Selecting and specifying commercially available materials and machine elements.
7. Including economic and ethical considerations in their designs.
8. Preparing oral presentations and written reports documenting the conception, production and evaluation of their designs.

Course Requirements and Assignments

This course has a D2L course website for use by registered students. Any class handouts, slides, grades, announcements, and links will be available there, so please get in the habit of checking it often. To log in, go to: https://kennesaw.view.usg.edu/. Your logon is the same as your KSU Net ID, and your net password. There are help links on the website too.

Lecture Quizzes

Most lectures have an associated quiz. The three of these quizzes with the lowest grade will be dropped from your final grade. Make-up quizzes will not be offered. You can use your books, notes and other resources to answer the question(s), but keep in mind that you will be expected to answer this level of question during exams WITHOUT these resources.

In-Class Quizzes

In-class quizzes will be given throughout the semester and may be announced or unannounced. The lowest of your graded in-class quizzes will be dropped from your final grade. Make-up quizzes will not be offered.

Homework

Homework will be assigned but will NOT be graded. Solutions will be posted on D2L. These problems are an excellent way to prepare for exams.

Exams

Two exams during the semester and a cumulative final exam will be offered in class at times indicated on the course schedule. The exams are closed book and notes, but an equation sheet will be provided. A calculator will also be allowed on exams.

Evaluation and Grading Policies

GRADING POLICY

Component	Weight
Lecture Quizzes	15%
In-Class Quizzes	10%
Exam #1	25%
Exam #2	25%
Final Exam	25%
*Homework assignments may be given from the Shigley textbook, but they will NOT be graded. Homework solutions will be posted on D2L.	

GRADING SCALE
90% - 100% A
80% - 89% B
70% - 79% C
60% - 69% D
0% - 59% F

I will round up grades if they are > or = 0.5. For example, an 89.6 is an A, but 79.2 is a C.

Midterm Grades: A midterm grade may be assigned by the midterm grade due date identified on the academic calendar. This midterm grade is for assessing mid-semester performance at least one week prior to the last day to withdraw without academic penalty. You may view your midterm grade in Owl Express. Note that only your final grade will be officially recorded on your academic transcript.

Course Policies

Attendance Policy
I will not take attendance in class. Keep in mind, however, in-class quizzes will be given throughout the semester and may be unannounced. Make-up quizzes will not be offered.

Policy on Missed Exams
If a student misses class in which an exam is administered, the test can **only** be made-up if arrangements were **made prior** to the exam which was missed. To be eligible for the make-up exam, proper documentation for missing the test is required (for example, a doctor's note if ill). If a student does not make advanced notification and/or does not have proper documentation, a make-up exam will not be granted. For a make-up exam that is granted, it will be scheduled with the instructor as soon as possible to the missed absence. **Notification of a missed exam or absence more than one week after the assignment's due date will NOT be granted regardless of excuse or documentation**. For excused absences, students will also have the option to replace one of their exam grades with the average value of the other two.

Instructional Continuity Plan
Kennesaw State University (KSU) may decide to close campuses, operate on a delayed schedule, or transition to remote instruction for inclement weather or in case of emergency.
The University will announce campus closures, delayed schedules, or remote instruction through KSU Alerts sent to your cell number on file and to your university email account. In addition, announcements will be posted on KSU's home page: www.kennesaw.edu.
Our class continuity plan includes:

1. Communication: Please check D2l Brightspace or e-mail for necessary instructions.
2. Assignments and Assessments: Deadlines for assignments and assessments may be adjusted to accommodate the emergency situation.

We understand that emergencies create unique challenges. If you need additional support during an emergency, reach out via or e-mail. The university also offers resources such as counseling and academic support, which can be accessed remotely.

Policy on the Usage of Artificial Intelligence
In this class, you are welcome to use AI for any purpose. However, you should note that all AI generative tools still tend to make up incorrect facts and fake citations, code generation models tend to produce inaccurate outputs, and image/art generation tools can produce copied work or offensive products. You will be responsible for any inaccurate, biased, offensive, or otherwise unethical content you submit regardless of whether it originally comes from you or an AI tool. If you use an AI tool, its contribution must be credited in your submission. The use of an AI tool without acknowledgement is cheating and constitutes a violation of the KSU Code of Academic Integrity.

Policy on Regrading
Any requests for corrections to a grade must be accompanied by a typed description of the suspected error in grading. Any regrade will be a complete regrade of the submission, not just the question at issue (**Note:** this means your grade could change *up or down*). Resubmissions will only be accepted up to **2 weeks** after the assignments, quiz or exam has been handed back in class.

Institutional Policies

Federal, BOR, & KSU Required Syllabus Policies and Student Resources

KSU Student Resources

This link contains information on help and resources available to students: KSU Student Resources for Course Syllabus

Course Schedule (Tentative)

Dates	Topic	Reading
Week 1: January 6, 2025	Module 1: Introduction	Ch.1 & Sections 3.1-3.2 & 3.4-3.12
Week 2: January 13, 2025	Module 1: Introduction	Ch. 2 and Section 3.19
Week 3: January 20, 2025	Module 2: Failure Prevention	Sections 5.3-5.7
Week 4: January 27, 2025	Module 2: Failure Prevention	Sections 5.8-5.11 & 6.1-6.7
Week 5: February 3, 2025	**EXAM 1**	
Week 6: February 10, 2025	Module 2: Failure Prevention	Sections 6.8-6.9 & 6.19
Week 7: February 17, 2025	Module 2: Failure Prevention	Sections 6.10-6.11, 6.13 & 6.19
Week 8: February 24, 2025	Module 2: Failure Prevention	Sections 6.13, 6.16 & 6.19
Week 9: March 3, 2025	Module 3: Design of Mechanical Elements – Shafts & Springs	Sections 7.1-7.8 & 10.1-10.6
Week 10: March 10, 2025	*Holiday Break*	
Week 11: March 17, 2025	Module 3: Design of Mechanical Elements – Springs	Sections 10.7-10.10
Week 12: March 24, 2025	**EXAM 2**	
Week 13: March 31, 2025	Module 3: Design of Mechanical Elements – Bearings	Sections 11.1-11.6 & 12.1-12.6
Week 14: April 7, 2025	Module 3: Design of Mechanical Elements – Bearings & Gears	Sections 12.7-12.12 & 13.1-13.12
Week 15: April 14, 2025	Module 3: Design of Mechanical Elements – Gears	Sections 13.6-13.7, 13.13-13.14 & 14.1-14.2
Week 16: April 21, 2025	Module 3: Design of Mechanical Elements – Fasteners	Sections 8.1, 8.3-8.9 & 8.11
Week 17: April 28, 2025 (*Note*: M is last day of classes)	*Our final exam is scheduled for Tuesday, April 29, 6:00 PM – 8:00 PM*	
Week 18: May 5, 2025 (*Note*: M is last day of finals)	*Final grades due Thursday*	