

UNIVERSITY OF NORTH TEXAS – Mechanical and Energy Engineering
MEEN 3130 **MACHINE ELEMENTS** SYLLABUS. Spring 2020. 3 Credit hours

Instructor: Dr. Hassan Qandil (hassan.qandil@unt.edu)
Office Hours: F102K. TuTh 4:00 pm to 5:00 pm.
Lectures: (Sec-001: TuTh 12:30 pm to 1:50 pm) (Sec-002: TuTh 10:00 am to 11:20 am)
Location: F175 (Both sections)
Teaching Assistant: Nava Raj (navakhatri@my.unt.edu)
TA Office Hours: F102A. Mon 11:00 am to 12:00 pm, Wed 3:00 pm to 4:00 pm.

Prerequisite(s): Passing the following with a “C” or better:

- 1) ENGR 2332 Mechanics III, Stress Analysis (implies 2301 statics)
- 2) ENGR 1304 Engineering Graphics

Catalog Course Description: Applications of the principles of mechanics and mechanics of materials to machine design. The elements of machines are analyzed in terms of their dynamic behavior. Selection and sizing of machine elements. Students use the finite element technique for the analysis of machines and their counterparts.

Required Text:

“Shigley's Mechanical Engineering Design”, 10th or 11th, Budynas, McGraw Hill

Optional Resources:

- 1) “Machine Elements”, 3rd Ed., Schmid, CRC Press
- 2) “Mechanical Design of Machine Elements and Machines”, 2nd, Collins, Wiley
- 3) “Machine Design – An Integrated Approach”, 5th Ed., Norton, Pearson

ABET OUTCOMES: MEEN 3130 addresses several ABET program outcomes, including applying knowledge of mathematics, engineering and science as well as identifying, formulating and solving engineering problems. Upon successful course completion:

- 1) Learn the process for machine design.
- 2) Application of mechanics of materials into stable designs.
- 3) Determine failure and deformation mode of a design.
- 4) Apply static and dynamic failure theories in design analysis
- 5) Apply principals of mechanics, materials, stress analysis, statics, and dynamics to machine sizing.
- 6) Select appropriate dimensions and size of machine elements.

CALCULATORS: only calculator approved for course are those permitted on (FE) exam. No graphing calculators.

- 1) Hewlett Packard—HP 33s and HP 35s models, but no others.
- 2) Casio—All fx-115 and fx-991 models. Any Casio calculator must contain fx-115 or fx-991 in its model name.
- 3) Texas Instruments: All TI-30X and TI-36X models. Any TI calculator must contain either TI-30X or TI-36X in its model name.

GRADES: Standard grading scale used: 90/80/70/60. Re-grade request must be made in class the day returned. No re-grade requests after class dismissed. Entire exam will be re-graded, which may result in lower score than originally assigned. Make-up NOT allowed only exception being University excused absences with documentation provided.

Attendance 5% (extra credit for interactive lecture participation)
 Homework 20% due at beginning of every class
 Quizzes 20% in-class problem solving, like home practice
 Mid Term 25% reading comprehension / multiple choice / qualitative
 Final Exam 30% reading comprehension / multiple choice / qualitative

TENTATIVE LECTURE SCHEDULE

Week	Dates	Chapter	Topic	Quiz
1	Jan. 13 th - Jan. 17 th	3	Introduction / Loads	
2	Jan. 20 th - Jan. 24 th	3	Load and Stress (No Class Jan. 20th)	
3	Jan. 27 th -Jan. 31 st	4	Deflection / Stiffness	
4	Feb. 3 rd -Feb. 7 th	5	Static Failures	1
5	Feb. 10 th -Feb. 14 th	5	Static Failures	
6	Feb. 17 th - Feb. 21 st	6	Fatigue Failure	
7	Feb. 24 th -Feb.28 th	6	Fatigue Failure	2
8	Mar. 2 nd - Mar. 6 th	7	Shaft Design	
Midterm (Thursday, March 5th) (In-class for both sections - Ch: 3,4,5,6)				
9	Mar. 9 th - Mar. 13 th	SPRING BREAK (NO CLASSES)		
10	Mar. 16 th - Mar. 20 th	11/12	Bearing Design	
11	Mar. 23 rd - Mar. 27 th	11/12	Bearing Design	
12	Mar. 30 th - Apr. 3 rd	13	Gear Design	3
13	Apr. 6 th - Apr. 10 th	14/15	Gear Design	
14	Apr. 13 th - Apr. 17 th	-	FEA Introduction	4
15	Apr. 20 th - Apr. 24 th	-	Case Studies	
16	Apr. 27 th - May. 1 st	-	Case Studies	
Final (Room F175 - Ch: 7,11,12,13,14,15) Section 001: Thursday May 7th 10:30 am - 12:30 pm Section 002: Thursday May 7th 08:00 am - 10:00 am				

ACCEPTABLE BEHAVIOR: I consider this room to be place where you will be treated with respect. All expected to contribute to respectful and inclusive environment. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. We enforce student Code of Student Conduct at deanofstudents.unt.edu/conduct.

ACADEMIC INTEGRITY STANDARDS AND SANCTIONS FOR VIOLATIONS: According to UNT Policy 06.003, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. Academic dishonesty will not be tolerated and will result in zero assignment score and reported to Office of Academic Integrity. No exceptions. Having any calculator not on the approved list is a violation of Academic Integrity.

ADA STATEMENT: UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify eligibility. If a disability verified, ODA will provide student with accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. For additional information see the ODA website at disability.unt.edu

STUDENT PERCEPTIONS OF TEACHING EFFECTIVENESS (SPOT) Course participates in SPOT evaluations (<http://spot.unt.edu/> or email spot@unt.edu).

RETENTION OF STUDENT RECORDS Course follows Family Educational Rights and Privacy Act (FERPA) laws and UNT Policy 10.10, Records Management and Retention.

SYLLABUS CHANGES Instructor reserves right change syllabus. Any changes announced in class and posted to CANVAS with an accompanying email to student's UNT email address.