MIDDLE EAST TECHNICAL UNIVERSITY
MECHANICAL ENGINEERING DEPARTMENT
ME 307
MACHINE ELEMENTS I
FALL 2013-2014

http://www.me.metu.edu.tr/courses/me307

SECTION | INSTRUCTOR | OFFICE | SCHEDULE | ROOM
--- | --- | --- | --- | ---
01 | Dr. Metin AKKÖK | F-207 | Monday 9:40-11:30 | G-102
    |  |  | Wednesday 9:40-10:30 | 
02 | Dr. R. Orhan YILDIRIM | F-208 | Tuesday 11:40-12:30 | G-103
    |  |  | Thursday 10:40-12:30 | 
03 | Dr. Suat KADIOĞLU | B-318 | Tuesday 13:40-14:30 | G-102
    |  |  | Thursday 13:40-15:30 | 
04 | Dr. Metin AKKÖK | F-207 | Monday 15:40-16:30 | G-102
    |  |  | Wednesday 13:40-15:30 | 

COURSE ASSISTANTS

<table>
<thead>
<tr>
<th>ASSISTANT</th>
<th>OFFICE</th>
<th>e-mail</th>
<th>PHONE</th>
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</tbody>
</table>

COURSE GRADING AND EXAMINATIONS

The students who can not attend at least 60% of the lectures or who have the average of the midterm exam grades less than 25/100 WILL NOT BE ABLE TO TAKE THE FINAL EXAM according to METU Undergraduate Education Regulation Article 23. If you have a valid excuse for one of the midterm exams, then the decision to take the final exam will be based on your one exam grade. Make-up for the exams will be given after the final exam.

2 Midterms (22.5 % each) + Final (30 %) + 1 Project (15 %) + 3 Homework (2.5 % each) + Attendance (2.5 %) and participation will be considered.

- Midterm dates will be announced later by the department.
- Examinations may contain essay type questions and problems including definitions, derivations etc. You will be allowed to use ONLY the distributed (printed) NOTES and FORMULA SHEET.
- You will be required to attend the DEMO in the lab. Put your name on the demo lists, provided by the assistants, suitable to your schedule. You will get 2 points bonus for demo attendance. Make-up for demo will ONLY be given if you have a valid accuse.
- You can check the exam and homework papers and project reports within the week following the announcement of the grades. Once the objections are evaluated, then the grades will be finalized and NO OBJECTION will be accepted later on.
The project will be prepared at home and will be submitted on the announced date. NOTE that late submission of project will not be accepted and graded. The project should be submitted individually and the solution should reflect fully your own personal approaches and efforts. The projects which are duplicates of others (partly or fully) will not be graded and the necessary actions according to Code of Ethics will be taken.

MAKE-UP EXAMINATIONS

Make-up examinations may be given to those who have valid excuses which are approved by the department. If you believe that you are eligible to take the make-up exams, you must contact with the course instructor within one week after the regular exam date.

TEXT BOOK


REFERENCE BOOK

You can find a list of reference books on the website.

COURSE OUTLINE

Tolerances and fits 1-13, 7-8
Stress analysis 3-1, 3-2, 3-4, 3-5, 3-6
   3-D stress state 3-7, 3-8
   Thick-walled cylinders 3-14, 3-16
   Thermal stresses 3-17
Bending of curved beams 3-18
Contact stresses 3-19
Strain energy and Castigliano’s Theorem 4-7, 4-8, 4-9
Columns 4-11, 4-12
Static design criteria
   Factor of safety 1-11
   Stress concentration 3-13, 5-2
   Theories of static failure for ductile and brittle materials 5-1, 5-3, 5-4, ....5-11
Fatigue design criteria 6-1, 6-4, 6-7, 6-8, 6-9, 6-10
   Alternating stresses 6-11, 6-12
   Fluctuating stresses 6-13, 6-14
   Combined loading 6-15
   Cumulative fatigue damage 6-15
Design of shafts 7-1
   Static design 7-4
   Fatigue design 7-4
   Critical speed of shafts 7-6
Design of permanent joints
   Riveted joints 8-12
   Welded joints 9-1, 9-2, ...9-7
Design of detachable joints 8-1
   Power screws 8-2
   Bolted joints 8-3, 8-4, .... 8-11
   Keys, pins, retainer rings 7-7
Design of mechanical springs
   Helical springs 10-1, 10-2, ....10-11
   Miscellaneous springs 10-12, 10-13, 10-14, 10-15