Solid Mechanics for Mechanical Engineering MEEN 3330-002
Department of Engineering
Fall 2018

A. COURSE INFORMATION

Course number/section: MEEN 3330 – 002
Class meeting time: TR 3:30 pm 4:45 pm
Class location: CS 114
Course Website:

B. INSTRUCTOR INFORMATION

Instructor: Petru A. Simionescu, PhD, PE
Office location: EN 207B
Office hours: MW 3:00–4:30 PM, TR 2:00–3:00 PM
Telephone: 361-825-5899
e-mail: pa.simionescu@tamucc.edu
Appointments: by email

C. COURSE DESCRIPTION

Stress analysis of deformable bodies and mechanical elements; stress transformation;
combined loading; material failure theories; design fatigue; column instabilities; pressure
vessels; curved beams; plain and rolling element bearings; springs; power screws; power
transmissions (shafts, gears, belts and chains, clutches and brakes).

D. PREREQUISITES AND/OR COREQUISITES

ENGR3320 Strength of Materials (prerequisite)

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Machine Elements in Mechanical Design (MEMD), 6th ed. by R.L. Mott, E.M. Vavrek and
Applied Strength of Materials (ASM), 5th ed. by R.L. Mott

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is
essential for effective learning because it provides feedback to both students and instructors.
A critical step in this process is making clear the course’s student learning outcomes that
describe what students are expected to learn to be successful in the course. The student
learning outcomes for this course are listed below.

By the end of this course, students should be able to:

1. Calculate combined stresses and Mohr’s circle
2. Failure theories
3. Design for fatigue  
4. Design of curved beams  
5. Design of columns  
6. Design of pressure vessel  
7. Design of bolted and welded joints  
8. Linear motion elements  
9. Design of shafts and other power transmission components (gears, belts and chains, clutches and brakes)

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Face to face lecture and team based problem solving

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework and Quizzes</td>
<td>35%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
</tr>
</tbody>
</table>

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Stress and deformation analysis, Curved beams</td>
<td>3 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>3</td>
<td>Combined stresses and Mohr’s circle</td>
<td>4 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>4</td>
<td>Design for fatigue</td>
<td>5 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>5</td>
<td>Columns design</td>
<td>6 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>6</td>
<td>Pressure vessels / Midterm exam</td>
<td>11 ASM</td>
<td>TBA</td>
</tr>
<tr>
<td>7</td>
<td>Linear motion elements</td>
<td>17 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>8</td>
<td>Fasteners</td>
<td>19 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>9</td>
<td>Springs</td>
<td>18 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>10</td>
<td>Bearings</td>
<td>14 &amp; 16 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>11</td>
<td>Clutches and brakes</td>
<td>22 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>12</td>
<td>Bolted and welded joints</td>
<td>20 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>13</td>
<td>Shaft design</td>
<td>12 MEMD</td>
<td>TBA</td>
</tr>
<tr>
<td>14</td>
<td>Final exam</td>
<td>comprehensive</td>
<td></td>
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</table>

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
J. COURSE POLICIES

Attendance/Tardiness
Students are expected to attend classes and arrive on time.

Late Work and Make-up Exams
Late assignment submission and make-up exams will only be accepted for justified cause, and with prior notice to the instructor.

Extra Credit
N/A

Cell Phone Use
Students are required to turn off cell phone before the class starts.

Laptop Use
Allowed only with permission from the instructor.

Food and Drink
Not allowed

Participation
Students are expected to participate in class by answering questions when asked, and participate in lab experiments.

Others
N/A

K. COLLEGE AND UNIVERSITIY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to
disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (www.tamucc.edu/academics/calendar) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that
provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816 or visit http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.