STRENGTH OF MATERIAL: ENGR 3320
Department of Engineering and Computing Sciences
Fall 2018

A. COURSE INFORMATION

Course number/section: ENGR 3320/001
Class meeting time: MWF 8:00 AM-8:50 AM
Class location: EN108
Course Website:

B. INSTRUCTOR INFORMATION

Instructor: Dugan Um
Office location: EN 222C
Office hours: MTWH 9:00AM – 12:00PM
Telephone: 361-825-3381
e-mail: dugan.um@tamucc.edu
Appointments: by phone or email

C. COURSE DESCRIPTION

Concepts in strength of materials, stress, strain; deformation under load, direct, shear, and combined stresses; stress concentrations, bending stresses and torsional shear stresses, deflection in beams and shafts;

D. PREREQUISITEST AND COREQUISITES

ENGR2325

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Machine Elements in Mechanical Design, Fifth edition by Robert L. Mott
Applied Strength of Materials, Fifth edition by Robert 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. To learn about the basic concepts in strength of materials
2. To understand design properties of materials
3. To understand direct stress, deformation, and design
4. To perform calculation on torsional shear stress and torsional deformation
5. To learn about shearing forces and bending moments in beams
6. To learn about centroids and moments of inertia of areas
7. To perform calculation on stress due to bending
8. To perform calculation on shearing stresses in beams
9. To learn about deflection of beams

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>
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</thead>
<tbody>
<tr>
<td>Homework Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Test #1</td>
<td>15%</td>
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<tr>
<td>Test #2</td>
<td>15%</td>
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<tr>
<td>Test #3</td>
<td>15%</td>
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<tr>
<td>Test #4</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/27, 29, 31</td>
<td>Basic Concepts in Strength of Materials</td>
<td>1</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>9/5, 7, 10</td>
<td>Design Properties of Materials</td>
<td>2</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>9/12, 14, 17</td>
<td>Direct Stress, Deformation, and Design</td>
<td>3</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>9/19</td>
<td>Midterm Exam #1</td>
<td></td>
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<tr>
<td>9/21, 24, 26</td>
<td>Torsional Shear Stress and Torsional Deformation</td>
<td>4</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>9/28, 10/1, 3, 5</td>
<td>Shearing Forces and Bending Moments in Beams</td>
<td>5</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Assignment #</td>
<td>Notes</td>
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<tr>
<td>10/8, 10, 12</td>
<td>Centroids and Moments of Inertia of Areas</td>
<td>6</td>
<td>TBA in the class</td>
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<tr>
<td>10/15</td>
<td>Midterm Exam #2</td>
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<tr>
<td>10/17, 19, 22</td>
<td>Stress Due to Bending</td>
<td>7</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>10/24, 26, 29</td>
<td>Shearing Stresses in Beams</td>
<td>8</td>
<td>TBA in the class</td>
</tr>
<tr>
<td>10/31, 11/2, 5</td>
<td>Deflection of Beams</td>
<td>9</td>
<td>TBA in the class</td>
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<td>11/7</td>
<td>Midterm Exam #3</td>
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<tr>
<td>11/12, 14, 16</td>
<td>Combined stresses</td>
<td>10</td>
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<tr>
<td>11/19, 21, 23, 26</td>
<td>Mohr’s circle</td>
<td>10</td>
<td>TBA in the class</td>
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<tr>
<td>11/28</td>
<td>Midterm Exam #4</td>
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<tr>
<td>11/30, 12/3</td>
<td>Review</td>
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<td>?</td>
<td>Final Exam</td>
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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
I will not take attendance after the beginning of the semester. I expect all students to attend all classes and arrive on time. Late homework will only be accepted for cause; death in family, car accident, hospitalized, doctor appointments, etc. Homework will be accepted if it is placed in my mailbox or e-mailed to me by the due date.

Late Work and Make-up Exams
Late work is not going to be accepted. Make-up Exams are only arranged with 1 week prior notice. No make-up exam will be arranged after each exam.

Extra Credit
N/A

Cell Phone Use
Neither cell phone nor electronic devices are allowed in the class as well as in the laboratory. Students are required to turn off cell phone and Electronic Devices before the class starts.

Laptop Use
Not allowed.
Food in Class
Not allowed

Missed Exam
Makeup exam is possible only by one week ahead notice.

Participation
N/A

Others

K. COLLEGE AND UNIVERSITY 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)
  The grade of W will be assigned to any student officially dropping a course. Please
  consult with the instructor before you decide to drop to be sure it is the best thing to
do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar (http://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/student/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.

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.