



Department of

Mechanical Engineering

Mercer University

Syllabus for MAE 320
Solid Mechanics II Section 1
Fall Semester 2017
Meeting Days TTh 9:25 – 10:40 am
Room EGC 220

Instructor: Dr. Richard Kunz, Associate Professor
Department of Mechanical Engineering

Office: Suite 105F, School of Engineering

Hours: MW 10:00 – 11:00; TR 10:50 – 12:00
and by appointment

Phone: 478-301-4061

Email: kunz_rk@mercer.edu

Website: http://faculty.mercer.edu/kunz_rk/

Textbook:

Required:

Mechanics of Materials Plus MasteringEngineering with Pearson eText -- Access Card Package, R. C. Hibbeler, 10th ed., Pearson/Prentice-Hall, 2017. ISBN 978-0-134-51812-1

Catalog Description:

Stress, strain, axial deformation of statically determinate and indeterminate systems. Generalized Hooke's Law. Torsion, beam bending, shear stresses in beams, stress and strain transformation, beam deflections. Energy methods. Static and fatigue failure theories. Design of structural members: beams, columns, etc.

Course Objectives:

- Reinforce fundamental concepts of statics, stress, strain, and Hooke's Law and their application to stress and deformation under simple axial loading, torsion, beam shear and beam bending.
- Extend the elementary solutions to more complex geometries, loading, and material behaviors.
- Introduce concepts of stress and strain transformation and strain energy as precursors to consideration of combined stresses and failure theories.
- Develop a fundamental understanding of stress distributions and stress concentrations in structural components.

Prerequisites:

C or better in EGR 232, MAT 192.

Grading:

Homework/Quizzes	15%
Tests (3)	17% each
Final Exam	34%

Grade Averages: A: 90's; B: 80's; C: 70's; D: 60's; F: below 60.

Course Standards:

1. EGR 232 (Statics/Solid Mechanics) is listed as a pre-requisite to this course. You are expected to have mastered the concepts of statics and solid mechanics covered during that course. While brief reviews of certain topics from EGR 232 will be conducted from time to time, I will not be re-teaching that course here. If you are shaky on one or more key topics from the earlier course, it is your responsibility to review and refresh your understanding of the material.
2. **Homework Problems** will generally be assigned each class period and due one week later. Homework will be assigned and graded through the MasteringEngineering.com web application. Access to the website and details of its implementation are provided in a separate document (attached). Late homework will not be accepted.
3. **Reading** assignments will be posted at each class meeting. You are expected to read the listed sections before the next class to prepare for the material to be covered.
4. **Quizzes:** There will be occasional, unannounced, 10-15 minute quizzes at the beginning of class. Each quiz will count as two homework assignments.
5. **Tests:** There will be three 75-minute tests during the semester. **Tentative** test dates are listed below. Actual test dates will be confirmed no less than 1 week in advance. No make-up tests will be given without a documented excuse.
6. **Final Exam:** There will be a comprehensive three-hour final exam.
7. The final exam is scheduled for **Tuesday, 12 December, 2:00 – 5:00 p.m.**

Additional Information:

1. Please feel free to arrange a meeting with me at any point that you feel you need it. If you would like to see me, come to my office during posted office hours, catch me after class to schedule a time, call, email, or stop by my office.
2. The **honor code** provisions as outlined in the *Catalog* and in the student handbook, *The Lair*, and on the web at <http://www2.mercer.edu/HonorCouncil/default.htm> apply to everyone and to all work handed in. By turning in a paper to the instructor, each student certifies that he/she has neither given nor received unauthorized aid in its completion. Plagiarism is a violation of the honor code and is prohibited. When in doubt, please ask to avoid potentially embarrassing situations.
3. Please turn off mobile phones before entering the classroom.

4. Electronic communication is an important adjunct to face-to-face communication, including from professor to students, students to professor, and students to students. You must have regular access to your Mercer e-mail. If you do not have an active e-mail address on the first day of class, please secure one.

5. Students requiring accommodations or modifications for a disability should inform the instructor at the close of the first class meeting or as soon as possible. The instructor will refer you to the ACCESS and Accommodation Office to document your disability, determine eligibility for accommodations under the ADAAA/Section 504 and to request a Faculty Accommodation Form. Disability accommodations or status will not be indicated on academic transcripts. In order to receive accommodations in a class, students with sensory, learning, psychological, physical or medical disabilities must provide their instructor with a Faculty Accommodation Form to sign. Students must return the signed form to the ACCESS Coordinator. A new form must be requested each semester. Students with a history of a disability perceived as having a disability or with a current disability who does not wish to use academic accommodations are also strongly encouraged to register with the ACCESS and Accommodation Office and request a Faculty Accommodation Form each semester. For further information, please contact Carole Burrowbridge, Director and ADA/504 Coordinator, at 301-2778 or visit the ACCESS and Accommodation Office website at <http://www.mercer.edu/disabilityservices>

Tentative Course Coverage

	Chapter
Stress	1
Strain	2
Mechanical Properties of Materials	3
Axial Load.....	4
Torsion	5
Bending	6
Transverse Shear	7
Combined Loadings.....	8
Stress and Strain Transformation	9,10
Deflection of Beams and Shafts.....	12
Buckling of Columns.....	13

Test Dates (Tentative)

Test 1	Tuesday, Sept. 19
Test 2	Tuesday Oct. 24
Test 3	Tuesday, Nov. 21
Final	Tuesday, Dec 12 2:00 – 5:00 pm

First, make sure you have these 3 things...

1. **Email:** You'll get some important emails from your instructor at this address.
2. **Course ID:** MAE320S01KUNZF17
3. **Access code or credit card:** An access code card may be packaged with your new book or may be sold by itself at your bookstore. Otherwise, you can buy instant access with a credit card or PayPal account during registration.



Next, get registered and join your course!

1. Go to **www.pearson.com/mastering/engineering**.
2. Under Register Now, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor's Course ID (MAE320S01KUNZF17), and choose **Continue**.
5. Enter your existing Pearson account **username** and **password** and select **Sign in**.
You have an account if you have ever used a Pearson MyLab & Mastering product, such as MyLab Math, MyLab IT, or Mastering Chemistry.
 - If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.
 - Enter the access code that came with your textbook or was purchased from the bookstore.
 - Buy access using a credit card or PayPal account.
7. From the "You're Done!" page, select **Go to My Courses**.
8. Select **Yes** and enter your Course ID to join your course. Click **Continue**.
9. If asked, enter your Student ID according to the instructions provided and click **Continue**.
That's it! You should see the Course Home page for the course.

To sign in later:

1. Go to **www.pearson.com/mastering/engineering** or **www.pearson.com/mastering/computer-science** and select **Sign In**.
2. Enter your Pearson account **username** and **password** from registration, and select **Sign In**.
 - If you forgot your username or password, select **Forgot your username or password?**

To join another course for the same textbook (no additional purchase needed):

1. **Sign in** with the **username** and **password** that you specified during registration.
2. Click **My Courses** in the upper left and then choose **Join a Course**.
3. Enter the Course ID from your instructor and click **Continue**.
4. If asked, enter your Student ID according to the instructions provided and click **Continue**.
5. To switch courses, select **My Courses** from the course menu (left side).
6. Select any active course link that appears below "Switch to another course".