

MONTGOMERY COLLEGE
Dept. of Physics and Engineering, Rockville
ENES 220 Mechanics of Materials

Course Description:

ENES 220 Mechanics of Material 3 credits
Distortion of engineering materials in relation to changes in stress or temperature. Geometry of internal strain and external displacement. Elementary applications of beams, columns, shafts, tanks trusses and connections. PREREQUISITE: ENES 102, MATH 182. *Three hours lecture each week.*

Instructor:

C. Alex Hou, PhD, PE
Department of Physics, Engineering and Computer Science
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Required Text Book:

Mechanics of Materials , 9th Edition, by R. Hibbler
Published by Prentice Hall

Course Contents:

1. Stress and Strain
 - Normal and Shear Stresses
 - Strains
2. Mechanical Properties of Materials
 - Stress and Strain Diagram
 - Hooks' Law
3. Axial Load
 - Elastic Deformation and Thermal Stress
 - Statically Indeterminate
4. Torsion
 - Torsional Deformation and Stress
 - Thin-Walled Tubes
5. Bending and Transverse Shear
 - Shear and Moment Diagram
 - Bending Stress in Beams
 - Transverse Shear in Straight Bemas
6. Stress Transformation
 - Plane Stress
 - Mohr's Circle
7. Combined Loadings and Design of Beams
 - Pressure Vessels
 - Beam Design and Others

8. Deflections of Beams
Integration of the Bending-Moment Equation
Superpositions
9. Buckling of Columns
Buckling and Stability

Grading:

Attendance, Quiz, Projects	15%
Homework (4)	10%
Midterms (3)	45%
Final Exam (1)	30%

Reference Books:

1. Mechanics of Materials, 8th edition, by J. Gere and Goodno, Cengage Learning.
2. Mechanics of Materials, 7th edition, by F Beer, E. Johnston and J. DeWolf, McGraw Hill.

Make-Up Exam Policy:

Make-up exams are only given to the students who are officially excused. Please contact the instructor at least three days before the exam to re-arrange the make-up test. If emergency occurs that students can't prearrange the make-up test, students need to talk to instructor as soon as possible and provide documents to prove the situations. In these cases, doctor's letter, government's paper and other official documents are accepted.

Support Service:

A student who may need an accommodation due to a disability should talk to me as early as possible. A letter from Disability Support Service (DSS) authorizing your accommodations will be needed.