

EGM 3520-MECHANICS OF MATERIALS(SUMMER 2002)

Class meets MWF 4th Period (12:30-1:45pm) in Aero303. Instructor is **Dr.Kurzweg** .Grade will be determined by 3 in-class exams (30%each) plus weekly homework(10%) . No final. My office hours are MW9-11AM in Aero318 or you can contact me anytime via **uhk@aero.ufl.edu**. The course WEB page is found at **<http://www.aero.ufl.edu/~uhk/strength.htm>**

- 1-Introduction. Normal and shearing stresses
 - 2-Bearing stress and stress on an oblique plane
 - 3-Stress calculations for simple structures
 - 4-General stress tensor. Factor of safety
 - 5-Stress-strain diagram. Hooke's law and Young's modulus
 - 6-Statically indeterminate problems. Thermal strain
 - 7-Poisson's ratio, shearing strain, bulk modulus
 - 8-Saint-Venant's principle. Stress-Strain under axial loading
 - 9-Torsion and stresses in a shaft
 - 10-Stresses and angle of twist in the elastic range
 - 11-Stress concentration in circular shafts
 - 12-Torsion of non-circular thin-walled shafts
 - 13&14-**Review of Chapters 1 through 5. FIRST HOUR EXAM**
 - 15-Introduction to pure bending
 - 16-Deformation in symmetric members. Neutral axis
 - 17-Stresses and deformations in the elastic range
 - 18-Bending of composite members and stress concentrations
 - 19-Plastic deformations and elastoplastic materials
 - 20-Bending of curved members
 - 21-Transvers loading of prismatic members
 - 22-Determining shear on a horizontal surface
 - 23-Shearing stresses in a beams and thin walled members
 - 24-Stresses under combined loadings. Shear center
 - 25-Transformations of stresses and strain
 - 26-Principal stresses, maximum shearing stress
 - 27-Mohr circle for plane stress
 - 28-Mohr's circle for 3D and for plain strain
 - 29&30-**Review of Chapters 6 through 11.SECOND HOUR EXAM**
 - 31-Design of prismatic beams for strength
 - 32-Shear and bending moment diagrams
 - 33-More on V and M diagrams
 - 34-Principal stresses in a beam
 - 35-Deflection
of beams by integration
 - 36-Equation for the elastic curve
 - 37-Method of superposition
 - 38-Columns and Euler's formula
 - 39-Design of columns under centric and eccentric loads
 - 40&41-**Review of Chapters 12 through 14. THIRD HOUR EXAM**
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The book we are using is **MECHANICS OF MATERIALS** by **R.C.Hibbeler**, 4th Edition, Prentice Hall(2000).