Graduate Course Offering for Fall 2002

Dr. M. E. Barkey
Aerospace Engineering and Mechanics Department

•AEM 648 Theory of Plasticity (3) hours.

General Information:

The theory of plasticity concerns material behavior when the elastic limit of the material is exceeded. Applications of plasticity include metal forming, fatigue analysis, and limit load analysis of structures. The initial portion of the course will involve classical and modern treatments of plasticity, and the second portion of the course will involve the use of the finite element code ABAQUS to solve advanced engineering problems in plasticity.

Prerequisites:

A course in the Theory of Elasticity (or the consent of the instructor), and an undergraduate engineering or mathematics degree.

Recommended Textbooks:

The Mathematical Theory of Plasticity, R. Hill.

Continuum Theory of Plasticity, Khan and Huang

Plasticity Theory, Lubliner

ABAQUS Theory Manual, HKS Inc.

Preliminary List of Topics:

- Uniaxial material behavior past the elastic limit
- Yield criteria for isotropic and anisotropic metals
- Development of constitutive relations for proportional and nonproportional loading
- Constitutive relations for multiaxial, inelastic cyclic loading of metals
- Applications of plasticity analysis using ABAQUS

Meeting Time:

Tentatively scheduled for M1 Hardaway Hall 8:00-8:50am M, W, F but alternative times will be considered depending on availability of students and the instructor.

For more information...contact Dr. Barkey at 348-1621/mbarkey@coe.eng.ua.edu or contact Ms. Baker at 348-7300 for catalog number and enrollment information.