

Fall 2012 Course Announcement

**AE 528 - THEORY OF LARGE DEFORMATIONS IN
NONLINEAR CONTINUOUS MEDIA**

**8:30 - 9:50 am Tu Th 225 A Talbot Lab.
Call no.: 39793 4 Hours**

Prerequisite: Consent of the instructor

Instructor: Harry H. Hilton
316 Talbot Lab., MC 236
333-2653 Email: h-hilton@illinois.edu

Who should take this course: Students interested in mechanics, in bio-mechanics, in engineering structural & composite materials and structures, and in nonlinear problem foundations, formulations & solutions.

Brief course description: Generalized tensors and finite deformations. Isotropic and anisotropic material modeling & constitutive relations with applications to metals, composite and polymers. Exact & asymptotic solutions, inverse problems, theory of successive approximations, stress-strain relations in terms of strain energy functions, thermodynamics of deformable media, finite plane strain. Solutions to many engineering problems (bending, torsion, pressurized cylinders, fiber reinforced beams and plates, combined loadings, etc.). Nonlinear finite element formulations & solutions.

Text: Green & Zerna *Theoretical Elasticity*. Dover Publications.

This course will not be offered again until the Fall 2014 semester

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