CATALOG DESCRIPTION

Kinematics of deformation, concept of stress, conservation of mass and balance of linear momentum, angular momentum and energy. Constitutive equations for inviscid and viscous fluid, and linear and nonlinear elastic solids.

COURSE PREREQUISITES

Physics 7A; Mathematics 53, 54.

TEXTBOOK(S) AND/OR OTHER REQUIRED MATERIAL

An undergraduate course in strength of materials or fluid mechanics is expected.

Most of the material covered in the course is contained in P. M. Naghdi's typed notes for ME 185.

COURSE OBJECTIVES

To introduce students to the fundamental concepts of the mechanics of deformable media.

DESIRED COURSE OUTCOMES

Knowledge of kinematics, balance laws, and constitutive equations for deformable bodies, including classical solids and fluids.

TOPICS COVERED

Kinematics: Motion, deformation, strain, velocity field, vorticity, Reynolds' transport theorem.


 Constitutive equations: Inviscid and viscous fluids, nonlinear and linear elasticity.
CLASS/LABORATORY SCHEDULE

Three hours of lecture and one hour of discussion per week.

CONTRIBUTION OF THE COURSE TO MEETING THE PROFESSIONAL COMPONENT

Problem solving, critical thinking.

RELATIONSHIP OF THE COURSE TO ABET PROGRAM OUTCOMES

An ability to apply knowledge of mathematics, science, and engineering. An ability to identify, formulate, and solve engineering problems.

ASSESSMENT OF STUDENT PROGRESS TOWARD COURSE OBJECTIVES

Assessment is through homework sets and exams.

PERSON(S) WHO PREPARED THIS DESCRIPTION: James Casey  18 May 2010

ABBREVIATED TRANSCRIPT TITLE (19 SPACES MAXIMUM): INTRO CONTINUM MECH
TIE CODE: LECS
GRADING: Letter
SEMESTER OFFERED: Fall
COURSES THAT WILL RESTRICT CREDIT: None
INSTRUCTORS: Professors Casey, Papadopoulos, Johnson, and Steigman
DURATION OF COURSE: 14 Weeks
EST. TOTAL NUMBER OF REQUIRED HRS OF STUDENT WORK PER WEEK: 9
IS COURSE REPEATABLE FOR CREDIT? No
CROSSLIST: None