521 ADV FLUID MECH II

Winter Term 1996

COURSE DESCRIPTION

ME320 - Fluid Mechanics I. Prerequisites: ME 235 and ME 240. (3).
Control volume analysis; continuity, momentum, angular momentum, and energy equations. Dimensional analysis and similitude. Introduction to differential analysis; kinematics; fluid statics; inviscid flow; potential flow; simple viscous incompressible flow; lift and drag. Steady one-dimensional compressible flow. TEXTBOOK: Fox & McDonald, **Introduction to Fluid Mechanics**, 2nd Ed., Wiley, 1978.

ME520 (AM 520) Advanced Fluid Mechanics I. Prerequisite: ME 320. (3).
Fundamental concepts and methods of fluid mechanics; inviscid flows and Bernoulli theorems; potential flow and its application; Navier-Stokes equations and constitutive theory; exact solutions of the Navier-Stokes equations; boundary layer theory; integral momentum methods; introduction to turbulence.

ME521 (AM 521) Advanced Fluid Mechanics II. Prerequisite: ME/AM 520. (3).
Viscous flow fundamentals; vorticity dynamics; solution of the Navier-Stokes equations in their approximate forms; thin shear layers and free surface flows; hydrodynamic stability and transition to turbulence; fundamental concepts of turbulence; the turbulent boundary layer; introduction to turbulence modeling.

Instructor: Wm. Schultz
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Phone: 936-0351
Email: schultz@engin.umich.edu
Office hours: Drop in and by appointment
Text: none (see reserve list, some stuff on Web later)

Grading:	Homework	40%	(includes simple experiments and computer problems! Moderate interaction encouraged)
	midterm	30%	(two week notice)
	Final	40%	(comprehensive)