MEC 393: Engineering Fluid Mechanics  
Spring 2010

Instructor: Dr. Foluso Ladeinde, 224 Heavy Engineering Building  
E-mail: Foluso.ladeinde@sunysb.edu

Time and Location: TuTH 11:20AM - 12:40PM; EARTH & SPACE 183;  
01/25/2010 - 05/18/2010

Office Hours: TBD


Reference Texts:


Course Description: The application of the principles of fluid mechanics to important areas of  
engineering practice such as piping system and duct design, aircraft wing design, compressible  
flow analysis, and the design of turbomachines.

Prerequisite: MEC 364

Course Outline:

1. Introduction to the Course. MEC 364 versus MEC 393.
2. Review of the Governing Equations in Integral Form. Reynolds Transport Theorems,  
Rectilinear and Angular Forms of the Equations. Generalized Bernoulli Equations.  
Sample Design Analysis using the Integral Forms of the Equations.
Simplifications of the Navier-Stokes Equations. Non-dimensionalization of the  
Computational Fluid Dynamics (CFD) and Discussion of the CFD project.
4. Analysis of Internal Incompressible Viscous Flow Using the Generalized Bernoulli  
Equations
5. External Incompressible Viscous Flow Field
6. Introduction to Turbomachinery
7. Incompressible, Inviscid, Flow Field
8. Airfoil and Wing Aerodynamics and Design
9. Incompressible Flows Around Airfoils of Infinite and Finite Span
10. Dynamics of a Compressible Flow Field
11. Introduction to Flight at Transonic, Supersonic, and Hypersonic Speed Regimes, if Time  
Permits

Grading:
Attendance: 5%
Homework: 10%
Exam I: 25%
Exam II: 35%
Project: 25%

If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge that you contact the staff in the Disabled Student Services office (DSS), Room 133, Humanities, 632-6748v/TDD. DSS will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation of disability is confidential.