SYRACUSE UNIVERSITY  
L.C. SMITH COLLEGE OF ENGINEERING AND COMPUTER SCIENCE  
DEPT. OF MECHANICAL AND AEROSPACE ENGINEERING  

FLUID MECHANICS  
MAE 341  
FALL 2006  

CATALOG DESCRIPTION  

INSTRUCTOR INFORMATION  
Prof. T. Dang  
145 Link Hall  
tqdang@ecs.syr.edu, 443-4311  
Office hours: Thursday 1:30-3:30pm  
Friday 9:00-11:00am  

TEACHING ASSISTANT INFORMATION  
First half of course: Sameer Kadhikhaye  
043 Link Hall  
spkadhik@syr.edu, 443-2218  
Office hours: TBA  
Second half of course: Mehmet Sarimurat  
043 Link Hall  
mnsarimu@syr.edu, 443-2218  
Office hours: TBA  
Grader: TBA  
Office hours: TBA  

COURSE WEB INFORMATION  
http://www.ecs.syr.edu/faculty/dang/mae341. We will post reading/homework assignments, homework/exam solutions on the web page.

TEXTBOOK  

ADDITIONAL REFERENCES  
Fluid mechanics films will be shown to demonstrate concepts learned during the semester.
PREREQUISITES BY TOPIC
To succeed in this course, students should possess the following knowledge and skills:
1. Classical mechanics (PHY 211)
2. Calculus and vector analysis (MAT 397)
3. Some knowledge of differential equation

COURSE LEARNING OBJECTIVES
The course has the following objectives:
A. Learn basic skills to solve fluid-static problems.
   [ABET PROGRAM OUTCOMES {a,e}]
B. Learn basic skills to solve fluid-dynamic problems.
   [ABET PROGRAM OUTCOMES {a,e}]
C. Gain basic knowledge of differential analysis.
   [ABET PROGRAM OUTCOMES {a,e}]
D. Study dimensional analysis.
   [ABET PROGRAM OUTCOMES {e}]
E. Solve viscous internal and external flow problems.
   [ABET PROGRAM OUTCOMES {a,e}]

COURSE TOPICS
Topics covered in this class include:
1. Fundamental concepts (chapter 1 & 2)
2. Fluid at rest (chapter 3).
3. Control volume analysis (chapter 4).
4. Introduction to differential analysis – Navier-Stokes equations (chapter 5).
5. Inviscid and incompressible flow – Euler-s and Euler-n equations (chapter 6).
6. Dimensional analysis (chapter 7).
7. Internal viscous flow – laminar/turbulent pipe flows & head loss calculation in flow systems (chapter 8).
8. External viscous flow – flat plate boundary-layer & drag force over immersed bodies (chapter 9).

OUTCOME MEASUREMENT
1) Weekly homework assignment (20% of final grade).
   Homework problem-solving is an essential element of this course. Approximately 10 homework sets will be assigned during the semester, with the lowest TWO homework scores dropped when computing the final homework grade. Typically, you will be assigned up to 8 problems per homework set, and we will grade up to 4 of them in random order. Homework must be turned in during class on the due date, which will be a Tuesday - LATE HOMEWORK WILL NOT BE ACCEPTED. Homework solutions will be posted on the web on the due date.
2) Exams (80% of final grade).
   Two one-hour exams will be given during the semester (each is worth 20% of your grade) and a final comprehensive exam (40% of your grade). It will be closed book, and you will
be allowed to have one 8.5in x 11in sheet of notes. You must have an “official” proof to take a make-up exam.
3) You are advised to attend the recitations since few example problems are presented during the lecture hours due to time constraint. In the recitation, the Teaching Assistant (TA) will go over problems that are similar to those assigned in the homework. Although you are not required to attend the recitation, the TA will keep track of the people attending it. It is highly recommended for those who have difficulties with the course materials to attend the recitation. At the end of the semester, I will look at the attendance sheet in determining the final grade of the people who are at the borderline of pass/fail.

ATTENDANCE POLICY
None

EXPECTATIONS FOR SUCCESS
You must do the weekly assigned homework independently (you can discuss the problems in study groups, but you should do them on your own)

GRADING POLICY
See above

PROGRESS REPORTING
None

TEST DATES
TBA

DETAILED DAILY SYLLABUS
None