University Of California, Berkeley  
Department of Mechanical Engineering  

ME 106: Fluid Mechanics (3 units)  
Undergraduate Required Course  

Syllabus  

CATALOG DESCRIPTION  
Three hours of lecture and one hour of discussion per week. This course introduces the fundamentals and techniques of fluid mechanics with the aim of describing and controlling engineering flows.  

COURSE PREREQUISITES  
ME C85 and ME 104 (ME 104 can be taken concurrently)  

TEXTBOOK(S) AND/OR OTHER REQUIRED MATERIAL  
Proficiency in fundamentals of mechanics and thermodynamics, and in mathematics inasmuch as it is needed for that proficiency. Familiarity with conservation principles, vector calculus, and differential equations. Computationally, proficiency in a high level programming environment (e.g. C/C++, Fortran, Mathematica, Matlab, IDL) to design algorithms and perform calculations. A text book or a set of notes may be required, at the discretion of the instructor.  

COURSE OBJECTIVES  
To develop a fundamental understanding of the science and engineering of fluid mechanics, through rigorous theoretical discussions, analytical examples, practical applications, and computational projects.  

DESIRED COURSE OUTCOMES  
Be able to analyze and design fluid mechanics components, and acquire the skill requisite to take part in any complex fluid mechanics systems.  

TOPICS COVERED  
Fluid properties, hydrostatics, conservation equations, analytic description of simple flows, flow measurement, empirical description of engineering flows, similitude, lift, drag, boundary layers, compressible flows, some engineering applications.  

CLASS/LABORATORY SCHEDULE  
Three hours of lecture per week.  

CONTRIBUTION OF THE COURSE TO MEETING THE PROFESSIONAL COMPONENT  
Equip a well-rounded engineer with fundamentals of fluid mechanics.
RELATIONSHIP OF THE COURSE TO ABET PROGRAM OUTCOMES

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(e) an ability to identify, formulate, and solve engineering problems
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

ASSESSMENT OF STUDENT PROGRESS TOWARD COURSE OBJECTIVES

Extensive homework, projects (typically three) and a midterm and a final exam.

PERSON(S) WHO PREPARED THIS DESCRIPTION:
Ōmer Savaş, 15 September 2010

ABBREVIATED TRANSCRIPT TITLE (19 SPACES MAXIMUM): Fluid Mechanics
TIE CODE: LECS
GRADING: Letter
SEMESTER OFFERED: Fall and Spring
COURSES THAT WILL RESTRICT CREDIT: None
INSTRUCTORS: Staff
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