Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
Submit original form and attachments.

1. This request is submitted by the Department of Civil Engineering
2. Course prefix, number and complete title of course: OCEN 678 Fluid Dynamics for Ocean and Environmental Engineering
3. Change requested
   a. Prerequisite(s): From: CVEN 462 or approval of instructor To: CVEN 311 or equivalent
   b. Withdrawal (reason): 
   c. Cross-list with:
      Cross-listed courses require the signature of both department heads.
   d. Change in course title and description. Enter complete current course title and current course description in item 4; enter proposed course title and proposed course description in item 5.
   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 6. Attach a course syllabus.
4. Complete current course title and current course description:

5. Complete proposed course title and proposed course description (not to exceed 50 words):

6. As currently in course inventory:
   Prefix | Course # | Title (excluding punctuation) |
   OCEN | 678 | FLUID DYNAMICS FOR OCEAN |
   Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | FICE Code |
   03000314080100060630036326  
   Change to:
   Prefix | Course # | Title (excluding punctuation) |
   OCEN | 678 | FLUID DYNAMICS FOR OCEAN |
   Lect. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code |
   Approval recommended by: Anthony Calwell 12/15/08

Head of Department Date
Chair, College Review Committee Date
Dean of College Date
Dean of College Date
Submitted to Coordinating Board by:
Associate Director, Curricular Services Date Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 10/08
Supporting statements for requested prerequisite changes:

OCEN 671: Listed prerequisite of OCEN 462 is a mistake; actual prerequisite is our undergraduate fluid mechanics course - CVEN 311.

OCEN 678: Listed prerequisite of CVEN 462 does not exist; actual prerequisite is our undergraduate fluid mechanics course - CVEN 311.

OCEN 682: Faculty feel material covered in OCEN 671 is required for proper understanding of material in this course. We want to make this information clear to the students, rather than simply requiring approval of instructor.

OCEN 683: Faculty feel material covered in OCEN 678 is required for proper understanding of material in this course. We want to make this information clear to the students, rather than simply requiring approval of instructor.
Course title and number: OCEN 678 Fluid Dynamics for Ocean and Environmental Engineering
Term (e.g., Fall 200X): Fall 2009
Meeting times and location: MWF 1:50-2:40 in CE 203

Course Description and Prerequisites

Fluid Dynamics for Ocean and Environmental Engineering. (3-0). Credit 3. Central conservation laws; Navier-Stokes equations; steady and unsteady Bernoulli’s equation; potential flow theory and basics of panel methods; laminar and turbulent boundary layer; transport equation in laminar and turbulent flow; flow past a body of any shape; scale analysis and the art of approximation. Prerequisite: CVEN 311 or equivalent.

Learning Outcomes or Course Objectives

The objective of this course is to develop an understanding of the principles of hydrodynamics, especially intuition and ingenuity, and to apply these principles to

- Determine flow fields for moving fluids using viscous and potential flow theories
- Study hydrodynamic forces applied on a moving body in an unbounded flow by application of viscous and potential flow theories (surface wave effects ignored)
- Apply scale analysis to find approximate solutions to the Navier-Stokes equations
- Develop an understanding of the hydrodynamic equations adequate to understand journal articles in the research literature on fluid mechanics

Instructor Information

Name: Scott A. Socolofsky
Telephone number: (979) 845-4517
Email address: socolofs@tamu.edu
Office hours: WF 2:40-4:00
Office location: CE/TTI 802B

Textbook and/or Resource Material

There is one required textbook for this course:


There will also be a number of handouts during the semester. One important online resource is a set of lecture notes put together by Prof. C. C. Mei at the Massachusetts Institute of Technology. These notes are available at


Among the many other good textbooks on this subject, the following books are also recommended

Tentative Course Calendar

The attached table presents a tentative course calendar. In addition to the weekly class meeting times, one important date should be noted:

- Midterm Exam Take-Home. Distributed Friday at the end of Week 12, Due Monday at the start of Week 13.

Homework Assignments

Homework assignments will be problem sets. These will be hand-written assignments solving problems related to the lecture material. These assignments will be graded by the instructor and returned in a timely manner. The problems in the homework will be similar to exam problems, but often with more details than can be covered in a one-hour exam.

You may ask others for help at places where you have made diligent attempts and have become stumped. You may ask others for confirmation of results at significant milestones in the problem. However, direct copying of solution sets or other’s papers will not be permitted (see Academic Integrity below).

Because of the large number of students in the class, assignments will be accepted from groups of up to 4 students. Each student will turn in a photocopy of the solutions and indicate clearly the other members of their group on the cover sheet. All students in a group will be given the same score for an assignment, and only one solution set will be graded. Group members may change from assignment to assignment, and students are encouraged to work with different groups in order to get to know each other better and to learn solution methods from a wide range of perspectives. All students will be responsible for understanding the solutions to all problems in an assignment. Students working in groups who choose to submit individual assignments will be guilty of plagiarism (see Academic Integrity below). Please be honest in reporting the students you with whom you are working.

Homework due dates will be announced when the homework assignment is distributed. Generally, homework is assigned on a bi-weekly schedule. No late homework will be accepted.

Course Project

There will be one course project that will be due on the day of the final exam. The project tests the main objective of this course, which is that students should be able to read and understand the research literature on fluid mechanics after completing this course. The project will require students to select two related papers from either the Journal of Fluid Mechanics or Physics of Fluids which address a topic in this course. Students will work in groups of two. The final project will consist of a conference-quality poster presentation and 15 minute oral seminar-quality presentation. Details of the course project will be handed out in a separate assignment description.

Class Participation and Quizzes

You are expected to attend all classes, turn in all assignments, and complete all exams at their scheduled times. Exceptions are only permitted for University Excused Absences as described above in Grading.

Classes will start on time, and pointers for the homework assignments and last-minute changes to the schedule may be announced in class. It is your responsibility to be in class to receive this information or to get the information from another student.

Exams

One take-home midterm exam is scheduled (see Course Calendar above for scheduling). The grading of the exam will be based on both the approach and the final answer. Exams will be open book and open notes, but no collaboration whatsoever is permitted.

Absences

The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments. Please read Part I, Rule 7 of the Texas A&M University Student Rules at

- [http://student-rules.tamu.edu/](http://student-rules.tamu.edu/)
Please contact me as soon as you know you will miss a class or an exam so that a reasonable alternative can be accommodated. Unexcused absences will result in a grade of zero for the missed work.

**Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

For additional information please visit: [http://www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor)

"An Aggie does not lie, cheat, or steal, or tolerate those who do."