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Course Web Page

http://scipp.ucsc.edu/~profumo/teaching/phys116B_11/phys116B_11.html

Class Hours

Lectures: Tu-Th, 4:00 PM - 5:45 PM, Soc Sci 2 075

Discussion Sections: Wed 3:30 PM-4:40 PM, Phys Sciences 110

Course Description

- Fourier Series and Transforms
- Ordinary Differential Equations
- Calculus of Variations
- Functions of a Complex Variable

Prerequisites

- Physics: 5A/L, 5B/M, 5C/N, 116A
- Mathematics: 23A, 23B

Required Textbook (on reserve)

- *Mathematical Methods in the Physical Sciences* by Mary L. Boas

Other Introductory Textbooks

- *Mathematical Methods for Scientists and Engineers* by D. A. McQuarrie
- *Essential Mathematical Methods for Physicists* by G. B. Arfken and H. J. Weber

Course Outline

Fourier Series and Transforms	Boas, Chapter 7	Mar 29 – Apr 7
Ordinary Differential Equations	Boas, Chapter 8	Apr 12 – Apr 28
Calculus of Variations	Boas, Chapter 9	May 3 – May 10
Functions of a Complex Variable	Boas, Chapter 14	May 12 – May 26
Course Review		May 31 – Jun 2

Course Grading and Requirements

Student evaluations will be based on their performance in the following four tasks. The tasks and their relative weights in determining the students' overall course grades are given below:

- **20%** Weekly Homework (9 problem sets)
- **20%** Wednesday Quizzes (during 7 Discussion Sections)
- **20%** Midterm Exam (Thursday, April 28, 4:45 PM)
- **40%** Final Exam (TBD)

Homework

Weekly homework assignments will be handed out each Thursday and are due at the beginning of class on the Thursday of the following week. The homework problem sets are (effectively) not optional, and will consist of a few problems from Boas' textbook. You are encouraged to discuss the class material and homework problems with your classmates and to work in groups, but all submitted problems should represent your own work and understanding. Late homeworks can be submitted to the grader, but will not contribute any points to the final grade. The Grader will grade each homework, and is responsible for the given grade. Grades for each homework set will consist

of 2 points (mostly correct), 1 point (less than 50% correct) or 0 points (no homework returned in time). Homework solutions will be typically made available on the course website on the homework due date.

Wednesday Quizzes

This class will have only one midterm. Effectively, the second midterm will be spread out over discussion sections in the form of 7 "Wednesday Quizzes" (WQ), on the following Wednesdays: April 6, 13, 20, and May 4, 11, 18, 25. During the first 20 minutes of discussion section you will be asked to solve one or two problems on the material discussed during the previous week in class. You will then hand in your work to the TA, who will grade it on a 2-1-0 points scale. The rest of discussion section will be devoted to understanding the solution to the assigned problems, and, time permitting, to questions on homework or class material. The idea behind Wednesday Quizzes is to keep you "on pace" with the material discussed in class. If you regularly attend class and pay attention, you shouldn't have any problems tackling the questions that will be assigned on WQ. Notice that WQ will all be open book tests. Special arrangements will be made with the TA if you absolutely cannot make it to discussion section on a regular basis.

Midterm and Final

The midterm exam and the final exam will be held in the same classroom as the lectures. The midterm will be a 1 hour written exam in class (regular lecture time) on Thursday April 28th, on the material covered up to Tuesday April 26th, while the final will be three hours long and cover the complete course material. Both the midterm and the final will be open-book (you can bring with you any book or notes), but only non-graphical, non-programmable calculators will be allowed (it will be up to the discretion of the Instructor to decide whether a calculator is or not allowed). Laptop computers and cellular phones of any kind will not be allowed. A practice midterm and final will be handed out a week before the exams. You must take the final exam to pass the course.

Final Grade

The minimal score not to fail the class is 60%.

The final grade will follow the percent guideline below:

- 60% to 70%: **C** range
- 70% to 85%: **B** range
- 85% to 100%: **A** range