

Physics 116B

Mathematical Methods in Physics

Days and Times: Tu-Th 11:40AM-01:15PM
Location : Thimann-Lecture -001
April 2 to June 8

Instructor: Sriram Shastry, sriram@physics.ucsc.edu, office ISB: 214, 459-5849

Course Website: The url of the website is

<http://physics.ucsc.edu/~sriram/116B/>

The login and password will be given in class.

Office Hour: Wed. 10:00-11:00 AM. Other times by appointment.
An extra hour will be announced before the final examination.

Required Textbook:

We will use “Mathematical Methods in the Physical Sciences” by Mary Boas (Edition 3). The same book is used for further courses in this series 116B and 116 C.

Some other books are on reserve in the library. I will give their titles in class, alternately you can enquire at the library counter. Several online websites also provide useful problems with solutions. An example is

[http://exampleproblems.com/wiki/index.php/Main Page](http://exampleproblems.com/wiki/index.php/Main_Page)

Syllabus: (Chapters and section numbers from Boas)

Tensor analysis, Chapter 10, Sec 1-9

Ordinary differential equations, Chapter 8, Sec 1-9

Complex Analysis, Chapter 14

Special Functions, Chapter 11, Sec 1-11

Calculus of Variations, Chapter 9, Sec 1-5

(If time permits) Introduction to Probability Theory, Chapter 15, Sec 1-6

TA:

Michael Arciniaga, michael.arciniaga@gmail.com

Logan Morrison loanmorr@ucsc.edu

Office hour of TA: Fri. 12:30pm-1.30pm, ISB 235

Discussion Sections: There are two discussion sections.

Timings: Mon. 12 Noon to 1:00 PM and Wed. 2:40 pm -3:40 pm

Location: Thimann 391

Tutorial Service:

A tutorial service for this class is being provided for class by Learning Support Services. The tutorial service website is http://www2.ucsc.edu/lss/tutorial_services.shtml

Recording of the lectures:

The lectures will be recorded and can be viewed at <http://webcast.ucsc.edu>

Grading and Examination schedule:

Your performance in the class will be decided on the basis of the midterm, final and homework assignments as follows:

Midterm (Thu 3 May in class)	:	30%
Final (Mon June 11, 8 AM-11 AM)	:	50%
Homework	:	20%

The midterm and final will be closed book exams. You are allowed one page of handwritten notes if you wish. In the examination, **you will get**

ZERO credit if the work is not displayed. Writing down an answer without the logic or explaining your reasoning, will be viewed unfavorably. Please use extra (i.e. scratch) paper to write your answers and **do not write anything on the examination paper itself- except your name.** A good performance on the final examination is necessary in order to get a passing grade.

Homework

There will be nine homework assignments. These will be handed out each Thursday and due back the following Thursday. It is very important to work hard on the homework problems. You don't really understand a topic until you are able to solve problems in it. The way to learn how to solve problems is through practice. You are encouraged to discuss the homework problems with other students. You are also encouraged to attend the discussion section and office hours for additional help, either with problems or bookwork.

To get credit for your homework and exams, *you must show your working*. Simply writing down the answer will not do.

Homework and Exam solutions:

The homework is due on Thursdays and the solutions of the required problems (only) will be posted on the website after the due date. There will be also optional problems for practice, which you should do for learning the material thoroughly.

The solution of the exam will also be on the website.

Examination and homework code:

Please follow the honor code in examinations- do not copy and do not allow others to copy from you. For other work, collaborate and discuss but do the homework separately.

Cellphones and laptops in Class

Turn off your cell phones in class. They are highly disruptive. Laptops used for calculations are OK, but not so if you use them for email/messaging. Offenders are easily spotted and should expect unpleasant consequences.

Class code and questions in class:

Questions in class liven up the experience and are very important. I welcome them.

Having said that, in order to protect a creative environment for learning, it will be best if we follow a protocol that is respectful of each other and also the class. The instructor is often working with a continuous set of themes, and breaking that continuity can be distracting for all concerned- including other students.

Feel free to ask questions in order to clarify ideas, problems, definitions etc that are being **currently** (or very recently) discussed by the instructor. Make sure that your question is reasonable, or fair, before asking it.

An example of a reasonable or fair question is to ask for an illustration of something that has been just introduced, or ask for illustrating an abstract definition that has been given. You may of course point out algebraic errors if you see them on the board, usually there will be plenty of those.

An example of an unreasonable or unfair question is to ask for the definition of some term that was taught in a lecture that you missed, or never learnt although it is part of the pre-requisites. It is also unfair to ask for clarification from something that was taught a while ago, say 15 minutes ago. As long as you are making sure that your question is not forcing a break in continuity, it should be fine.