PHY 6937 (Mathematical Methods)
12:20-1:35 MW
Keen 701

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Course Description: Mathematics course intended to cover background knowledge necessary for a physics PhD program, with additional material related to techniques used in solving advanced physics problems.
Prerequisites: 3 semesters of calculus assumed. Some of this material will be reviewed.

Recommended texts: There is no official textbook, but Mabanta and Silva's topics guide contains most of the essentials. Recommended (not required) mathematical methods textbooks are:

- *Mathematical Meothds for Physics and Engineering*, Riley, Hobson, & Bence

- *Mathematical Methods for Physicists*, Arfken, Weber, and Harris

- *Mathematical Methods in the Physical Sciences*, Boas

Course Objectives:
At the end of the course, students will have a broad mathematical knowledge base and improved practical physics problem-solving skills.

Grade Breakdown:

In-class	15%
Assignments	60%
Midterm	10%
Final	15%

Letter Grade Distribution:

		>= 92	A	88 - 92	A-
84 - 88	B+	80 - 84	B	76 - 80	B-
72 - 76	C+	68 - 72	C	64 - 68	C-
52 - 64	D			<= 52	F

These boundaries represent a minimum grade awarded for a given performance level, and may be adjusted in students' favor as appropriate.

Course Policies:

- **Attendance and Absences**
  Attendance is required, and portions of class will be collaborative work relating to material just covered. An in-class participation grade will be assigned for this work. Some or all of this grade will depend on in-class work collected–this work is not expected to be 100% correct for full credit. Approximately 10% of such work will be dropped to account for occasional needs to miss class.
  If you must miss the midterm exam, notify the instructor as soon as possible.

- **Assignments**

  - Assignments will be due approximately weekly (probably Wednesdays) at the beginning of class.
  - You may work with others, but the work you turn in should be your own.
  - As this is a mathematics class, computer aids are not allowed unless otherwise specified in the assignment.

- **Exams**
  There will be two in-class exams, a midterm and a final. The midterm may have a take-home component. The midterm will take place on or about Oct. 16. The The final exam is Tuesday, Dec. 10, 10am-noon, with extra emphasis on the latter half of the course material. At the instructor's discretion there may be in-class quizzes as part of the in-class participation grade. Quizzes and exams are individual exercises, including any take-home portion, and collaboration is not allowed.

- **Disabilities**
  If you have any disability that requires accommodation, please bring it to my attention as soon as possible.

Course Outline:

The precise material covered will depend on the abilities and backgrounds of the students. Broadly, we will split the course into three general areas: Review, Core Material, Advanced Topics.

The Review area of the course will review important algebra and calculus techniques and results, and will comprise the first 2-4 weeks of the course.

The Core Material will be the main focus of the course, taking 8-12 weeks. The topics to be covered, in likely order, are:

- Linear Algebra

- Ordinary Differential Equations

- Partial Differential Equations

- Special Functions

- Statistics

- Complex Analysis

Finally, the Advanced Topics section will address bonus material that may not appear in core courses. Which topics we cover will depend on student interest and time, but some proposed topics are:

- Differential Geometry

- Group Theory

As this course is new at FSU, this syllabus should be taken as a rough outline only, and will likely be updated and redistributed as the semester progresses.