

PHYS 6124: *Mathematical Methods in Physics I* is a graduate-level course whose aim is to teach you practical methods for solving certain mathematical problems of physics. You are certain to use the skills acquired in this course in the future, both in the classroom and in your careers as research scientists. This course is not aimed at budding theorists; as mathematics is the language of physics so must you learn to speak the language fluently, whether your aim is to specialize in theory or experiment.

The broad aim of this course is to give you a working knowledge of how to arrive at and handle some of the partial differential equations that commonly arise in the description of physical systems. Along the way we shall acquire some familiarity with certain of the so-called special functions. The material that we aim to cover has a coherence and structure to it that Stone and Goldbart emphasize. They assume that you are familiar with certain mathematical concepts (see *Handout 3*).

For many of you this will be your first year in graduate school and (especially if you are teaching for the first time) you may initially find the experience quite bewildering. I encourage you to ask questions in class: not only does this give me some feedback that will help me to judge whether I'm explaining things clearly, but often you will also be clarifying points for others. Typically, the lectures will be used to introduce and develop the theoretical concepts, and for homework you will work through examples chosen to illuminate these ideas. The material in this course cannot be mastered without practice and, correspondingly, the homework will count all of your final grade. If at any time you find yourself having serious difficulties, please don't hesitate to come and see me, or call me, or contact me at predrag@gatech.edu.

I shall have office hours at least once per week, at a mutually convenient time, which we shall try to establish at the beginning of the semester. In my experience, informal discussions in smaller groups can be extraordinarily rewarding, and I urge you to come to these sessions.

We are fortunate to have a large number of high-calibre seminar and colloquium series here on campus, and you should try to attend at least some of them regularly. Especially while you are in the process of making the crucial decision of what research field to enter it is very important to hear something about a broad range of fields. You can find out about seminars and colloquia from the weekly *School of Physics calendar* (*i.e.*,), the *Seminars* link on the School of Physics's website (www.physics.gatech.edu), or from the School of Physics notice board. Additionally, I shall try to remember to announce interesting seminars, *etc.* You may be pleasantly surprised by how much you can follow, especially after you have attended several such talks and have got used to the style of presentation.