

**Course Information**  
**Physics 412: Introduction to Quantum Mechanics**  
**Spring Semester 2015**

- Meeting Time:       Tuesdays and Thursdays, 11:10 am – 12:25 pm
- Location:            Nielsen 306
- Instructor:          Dr. Geoffrey Greene  
                          515 Nielsen  
                          [ggreene@utk.edu](mailto:ggreene@utk.edu)
- Office Hours:        Tuesday & Thursday 10:00am -11:00 or by appointment  
                          (Please contact Dr. Greene by email to arrange an appointment)
- Textbook:            “*Introduction to Quantum Mechanics*,” D.J. Griffiths
- Prerequisites:       PHY 240, MATH 435, and PHY 411  
                          **Note about prerequisite –**  
                          Physics 412 requires a rather high degree of mathematical  
                          sophistication. A familiarity with linear algebra and  
                          differential equations is essential for success in this course.

Physics 412 is the second semester of a two semester sequence (with PHY 411) and is mandatory for all physics majors pursuing the Academic Physics Concentration. 412 will deal with applications of quantum mechanics to a number of physical systems. The topics of Physics 411 will roughly cover chapters 5-12 of Griffiths and will follow the text quite closely. Specific Topics will include:

- Identical particles (including 2-particle and multi-particle systems)
- Perturbation Theory
- The Variational Principle
- The WKB Approximation
- The 2-level system
- The Adiabatic Approximation and Berry’s Phase
- The EPR Paradox and Bell’s Inequality

The solving of problems is an integral and essential part of this course.

## Course Policies

### Grading

In addition to the lectures, the course will include problem sets, one midterm exam, and a final. Course grades will be determined by a weighted average of

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|-----------------|------------|
| 1) Problem Sets | weight 40% |
| 2) Midterm,     | weight 30% |
| 3) Final,       | weight 30% |

### Problem Set Policy

It is anticipated (and recommended) that students work together on the problem sets. However, solutions to problem sets must be submitted in each student's own hand. If the student worked with a study group, the names of the study group members must be noted on the submitted homework. Students should be prepared to discuss solutions to the homework in class and will be expected to be able to solve assigned problems on the board in class. Homework grades will be based in part on in-class activities.