

University of Maryland

Department of Physics

Spring 2015

Prof. Ian Appelbaum

Physics 402

Title: PHYS 402 Quantum Physics II: Quantum states as vectors, spin and spectroscopy, multi-particle systems, the periodic table, perturbation theory, band structure, etc. This is a 4 credit course.

Prerequisites: PHYS401 (Quantum I), PHYS374 (Math Methods/ Diff. Eq.), and MATH240 (Linear Algebra).

Instructor: [Prof. Ian Appelbaum](#), [Physical Sciences Center, Rm 2154](#).

Phone: x5-0890 / e-mail: appelbaum@physics.umd.edu

Please arrange a meeting time via email to discuss grades or other personal situations. *Questions about the course material should be directed to the piazza page at <https://piazza.com/umd/spring2015/phys402>.*

TA: Sabyasachi Barik (sbarik@umd.edu) Physics 0220, x5-5969

Course Web Site: All course materials, including this syllabus, homework assignments, solutions, lecture notes, etc. will be posted to the [Piazza page](#).

Schedule: Three meetings weekly in [PHY 1201](#):

Monday and Friday 9:00am- 9:50am

Wednesday 9:00am- 10:50am

Recommended Texts: D. Griffiths, [Introduction to Quantum Mechanics](#), 2nd edition, is the recommended text. You should be able to get by with the first edition too. Errata are available from the author's [website](#). The lectures will **not** follow the book verbatim, so if you prefer any of the many other quantum mechanics texts available, feel free to use them.

Overview: The goal of this class is to generalize the basic principles of quantum mechanics to systems with spin and/or more than one particle and apply this formalism to situations of physical interest. In doing so, we will learn several approximation methods required to describe realistic

systems in atomic, molecular, nuclear, particle and astrophysics. These topics are discussed in Chapters 5 to 11 of Griffiths' text. There will be three 50-minute lectures per week, and one recitation hour. Please do not use your cellphones during lecture.

Homework: Homework is assigned approximately every week via the Piazza page and will be due *before lecture begins*. Late homework will not be accepted and will receive a grade of 0.

Grading: Your course (letter) grade is determined by your numerical scores on homeworks (30%), one midterm (30%), and one final (40%).

Dropping the Course: Note: the [last day to drop](#) the course is April 13.

Course Web Site: All course materials, including this syllabus, homework assignments, solutions, lecture notes, etc. will be posted to the [Piazza page](#).