PHY 567: Quantum Mechanics

Spring 2016

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Class Time and Location: Tu/Th 2:00-3:20 PM in Physics 106

Office Hours: 3:30-4:30 Tuesdays (or arrange by phone or e-mail)

Textbook: Griffiths, David J., “Introduction to Quantum Mechanics,” Edition 2 (Prentice Hall PTR 2004); Chapters covered: 1-5, Appendix A

GOALS

- Learn how Quantum Mechanics extends our understanding of nature from the classical realm
- Learn how to solve problems in Quantum Mechanics
- Learn about Hilbert Spaces and Dirac Notation and how to use them to solve more problems
- Learn why Quantum Mechanics is important in science and technology today

Outline of Topics

- Probability and The Wave Function, Ch. 1
- Familiar Fourier Transforms
- Time-Independent Schrödinger Equation, Ch. 2
- Linear Algebra Review, Appendix A
- Formalism: Including Hilbert Spaces, Observables, and Dirac Notation, Ch. 3
- Quantum Mechanics in Three Dimensions, Ch. 4
- Identical Particles, Ch. 5
GRADING

- 20% Homework*: Assigned on Thursdays, due on Thursdays by the end of class. 2 days late exception allowed (except week before exam)
- 40% Examinations (2, 20% each)
- 25% Final Exam
- 5% Class Participation
- 5% In-class Quizzes
- 5% Short journal article presentation

*Homework should include both the original scratchwork/notes and a “write-up” final solution with:
  - A short (sentence or two max) description of the method you followed in planning out how to solve the problem (ex, followed example 2.3, started from final equation in problem and worked backwards, etc.),
  - All steps in solution written clearly on a new line, and
  - A description of why you took any non-algebraic or non-obvious steps, including logical thought processes where appropriate (using a key is handy).

Exam Dates

1. Feb 25
2. Apr 7

Additional Texts


Academic Integrity:

Syracuse University’s Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the policy and know that it is their responsibility to learn about course-specific expectations, as well as about University policy. The University policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and
other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first offense by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of Academic Integrity Policy. The standard sanction for a first offense by a graduate student is suspension or expulsion. For more information and the complete policy, see [http://academicintegrity.syr.edu](http://academicintegrity.syr.edu).

**Accommodations:**

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. For further information, see the ODS website, Office of Disability Services [http://disabilityservices.syr.edu](http://disabilityservices.syr.edu).

**Religious Observance Policy:**

SU’s religious observances policy is available at [http://supolicies.syr.edu/emp_ben/religious_observance.htm](http://supolicies.syr.edu/emp_ben/religious_observance.htm)

Syracuse University recognizes the diversity of faiths represented among the campus community and protects the right of students, faculty, and staff to observe the holy days according to their tradition.

Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance—provided they notify their instructors before the end of the second week of classes. Students have access to an online notification form through MySlice that they can use to notify their instructors.

MySlice: [https://myslice.syr.edu](https://myslice.syr.edu)