PHY 662 - Quantum Mechanics II
Spring 2016 syllabus

General information

Class meetings
Class schedule: Tuesday and Thursday 9:30AM - 10:50AM
Physics Building, Room 106

Instructor
Prof. Matt Rudolph
Office: Physics Building 369
Office hours: Wednesdays 2:00 PM - 3:00 PM or e-mail for appointment
email: msrudolp@syr.edu

Books
When necessary I will supplement in lecture and homeworaks from other sources. You are encouraged to look through other treatments of the same topic such as in J.J. Sakurai’s *Modern Quantum Mechanics*, or other appropriate text.
Class description

This course provides a follow-up to the first semester of non-relativistic quantum mechanics. I will present a number of different topics that build upon concepts introduced then. I expect you to be familiar with the concepts and mathematics behind quantum states in Hilbert spaces, position and momentum states and wavefunctions, solutions to the Schroedinger equation, and angular momentum including spin and addition of angular momentum.

I will cover a number of topics throughout the semester including:

• Identical particles
• Symmetries
• Approximation methods
• Perturbation theory
• Quantization of the electromagnetic field
• Scattering theory

I will pull in applications from particle physics and other fields to demonstrate how basic quantum mechanical concepts can be useful to understand more advanced topics. This course should prepare you for further course work including relativistic quantum field theory and more as well as research in physics.

Assessment

I will be assigning weekly homework assignments as well as a midterm and final examination. The grading breakdown will be as follows:

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<thead>
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<tbody>
<tr>
<td>Homework</td>
<td>40%</td>
</tr>
<tr>
<td>Midterm</td>
<td>25%</td>
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<tr>
<td>Final</td>
<td>35%</td>
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Important points:

• I will drop your lowest two homework scores before computing the average.
The midterm is scheduled in class, March 10th.

**Homework policies**

Homework will be due distributed on Thursdays at class time and simultaneously made available for download on Blackboard. It will be due one week later on Thursday in class. **Late homework will not be accepted.** I encourage you to work together on problems and to see out external sources for guidance, but copying solutions is not acceptable. On your assignments, list anyone you worked with and any sources you drew on (this will be included in the grade on that assignment). If you worked completely independently, note that instead.

**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/academic-integrity-policy/](http://academicintegrity.syr.edu/academic-integrity-policy/)

**Disability-Related Accommodations**

If you believe that you need accommodations for a disability, please contact the Office of Disability Services(ODS), [http://disabilityservices](http://disabilityservices).
syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498, TDD: (315) 443-1371 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.

**Religious Observances Policy**

SU religious observances policy, found at [http://supolicies.syr.edu/emp_ben/religious_observance.htm](http://supolicies.syr.edu/emp_ben/religious_observance.htm), recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays 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. For fall and spring semesters, an online notification process is available through MySlice/StudentServices/Enrollment/MyReligiousObservances from the first day of class until the end of the second week of class.