Quantum Mechanics I

PHY C56 S
Winter 2013

Professor Hanno Rein

Lecture	Wednesdays 10:00 am - 12:00 pm BV 361
Tutorial	Tuesdays 10:00 am - 12:00 pm BV 359
E-mail	`hanno.rein@utoronto.ca`
Website	`http://astro.utoronto.ca/~rein/`
Office	SW 504 C
Office hours	Wednesdays 1:30 pm - 2:30 pm or by appointment
Textbook	Introduction to Quantum Mechanics David J. Griffiths Pearson, 2nd edition

Lectures

We will closely follow the excellent textbook by David Griffiths. The tentative lecture schedule is listed below with relevant chapters. It is a good idea to read the chapters before the class. Note that the schedule may change at any time in response to performance and feedback from the students.

Tutorials and problem sets

Each week, you will be given a problem set at the end of the lecture or the end of the tutorial. The deadline for submission is the following week on Monday at noon. This is a hard deadline. We will discuss the problems the following day in the tutorial. The problems will closely follow the course material and are designed to prepare you for the tests and the exam.

You can drop off the work in the mail box on the fifth floor of the Science Wing or via e-mail. If you submit your work via e-mail, you need to use LaTeX and submit both the `.tex` and `.pdf` files. LaTeX submission will get a 10% bonus. You may work in groups to solve the problems but you need to hand in your own set of answers. Photocoping (for paper submission) and copy-and-pasting (for e-mail submission) is not sufficient.

Most importantly, **if you submit an answer, you need to understand it**. Be prepare to present your answer at the blackboard during the tutorial. The presenter will be selected randomly among all students who have submitted a correct answer.

You need to present at least three of your answers over the length of the course. Failure to be able to present a submitted (and correct) answer will nullify all answers to the week's problem set. The fraction of submitted and correctly solved problems will constitute points towards your total grade.

Final Exam

The final exam will take place during the exam period. The exam may include, but is not restricted to, material from all lectures and all tutorials. You can use a non-programmable calculator and can bring one single-sided handwritten sheet of paper with equations.

Grading Scheme

The final grade will be calculated from submitted turotial work, two tests and a final exam. The ratio is as follows:

Tutorial work	30 points
Test 1	15 points
Test 2	15 points
Final exam	40 points

Absences

In the case of a problem that supports an absence to a tutorial session or an inability to hand in a problem set before the tutorial session, your grade will be calculated on the basis of all other tutorial work. In the case of a problem that supports the absence to one of the tests, your grade will be calculated by increasing the weight of the other test and the final exam. Valid and official supporting documentation must be submitted within five business days of the missed tutorial or test.

Accessibility

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in SW302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or `ability@utsc.utoronto.ca`.

Exam Period

April 10th - April 26th

Tentative Class Schedule

Week	Date	Tutorial	Date	Lecture
1	Jan 7	LaTeX Introduction	Jan 8	Vectors and Matrices Appendix A1-A3
2	Jan 14	Problem Set 1	Jan 15	Eigenvectors & Eigenvalues Appendix A4-A6
3	Jan 21	Problem Set 2	Jan 22	Hilbert Space and Observables Chapters 3.1 - 3.2
4	Jan 28	Problem Set 3	Jan 29	Eigenfunctions and Operators Chapters 3.3 - 3.4
5	Feb 4	Problem Set 4	Feb 5	The Uncertainty Principle Chapter 3.5
6	Feb 11	Problem Set 5	Feb 12	Dirac Notation, Oscillator Chapters 3.6, 2.3
7				Reading Week
8	Feb 25	Problem Set 6	Feb 26	Spherical Schrödinger Equation Chapter 4.1
9	Mar 4	Problem Set 7	Mar 5	The Hydrogen Atom Chapter 4.2
10	Mar 11	Problem Set 8	Mar 12	Angular Momentum Chapter 4.3
11	Mar 18	Problem Set 9	Mar 19	Spin - Part 1 Chapter 4.4
12	Mar 25	Problem Set 10	Mar 26	Spin - Part 2 Chapter 4.4
13	Apr 1	Problem Set 11	Apr 2	Two Particle Systems Chapter 5.1