Physics 434: Quantum Physics 3

Lectures: MWF, 8:30-9:20.
Room: DWE 2527.
Instructor: Anton Burkov.
Office hours: F 4:30-5:20, PHY 369, or PHY 313; T 3:00-4:00, PHY 369.
TA: Corey Rae McRae, crmcrae@uwaterloo.ca
Homework: (roughly) weekly.
Grade: homework 30%, midterm 20%, final 50%. Assignments will be posted online and must be handed in to the instructor in class. Late homework will be penalized. Assignments, which are more than one week late, will not be accepted.

Course outline

• Review of the basic principles of quantum mechanics. Dirac notation. Momentum operator as generator of translations. Time evolution operator and the Schrödinger equation.

• Theory of Angular Momentum.

• Symmetries in quantum mechanics.

• Time-independent and time-dependent perturbation theory.

• Quantum mechanics of relativistic particles. Dirac equation.

• Identical particles and second quantization. Path integrals.

Textbooks

• Required: J.J. Sakurai and J. Napolitano, Modern Quantum Mechanics.


Statement for students with disabilities

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.
Statement regarding travel and the final examination period

Student travel plans are not considered acceptable grounds for granting an alternative examination time.

Expectation of academic integrity

To create and promote a culture of academic integrity, the behaviour of all members of the University of Waterloo should be based on honesty, trust, fairness, respect and responsibility.

Avoidance of Academic Offenses. Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about rules for group work/collaboration should seek guidance from the course professor, TA, academic advisor, or the Undergraduate Associate Dean. For information on categories of offenses and types of penalties, students should refer to Policy #71, Student Academic Discipline, http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. Students who believe that they have been wrongly or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance, http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm.

Student grievances

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance, http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm.

Student appeals

Concerning a decision made under Policy 33 (Ethical Behaviour), Policy 70 (Student Grievance) or Policy 71 (Student Academic Discipline), a student may appeal the finding, the penalty, or both. Students who believe that they have grounds for an appeal should refer to Policy 71 http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm.