When/Where:
Lecture: Tuesday, Wednesday, Friday, 1:30 to 2:20 p.m., room PHYS. 150.
You are responsible for everything covered by the professor in lecture.

Instructor
Prof. Roger Melko, Office: Phys 368, 519 888-4567 x 38406
Office hours: Wednesdays, 3:00pm to 5:00pm, office PHYS 368
TA: Giacomo Torlai

Course topics
The following topics will be covered:
- Review of the wavefunction, position and momentum representation, the time-independent Schrodinger equation
- Operator formalism, Dirac notation and matrix representation
- The 3D time-independent Schrodinger equation, the hydrogen atom, angular momentum and spin
- Time-independent perturbation theory, the fine structure of Hydrogen, and the Zeeman effect
- Identical particles, Bosons and Fermions, Atoms and Helium.
- The variational principle, the ground-state of Helium

Resources
Alternative Textbooks: Scherrer, Bransden & Joachain, Gasiorowicz, Goswami

Student assessment
Students will be marked on one of two grade schemes:
A) 15% Assignments, 15% Midterm*, 70% Final examination
B) 15% Assignments, 35% Midterm*, 50% Final examination

Assignments will be handed out in class, and are generally due in one week, to be handed back to the instructor in class. Exceptions to this will be noted by the instructor. Late assignments may be considered, with prior permission by the professor, out of a reduced total grade.

* Writing the midterm is mandatory in order to pass the course.
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.*

see [http://www.registrar.uwaterloo.ca/exams/finalexams.html](http://www.registrar.uwaterloo.ca/exams/finalexams.html)

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](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](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](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](http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm).