

PHYS 215: Introductory Quantum Physics
May 2013 - August 2013

Instructor: Prof. Michel Lefebvre
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Lectures: 10:30 - 11:20, Tuesdays, Wednesdays and Fridays, in Elliott 060
First lecture: Wednesday 1 May 2013.

Course web: moodle.uvic.ca

Text: *Modern Physics for Scientists and Engineers*, 4th edition, S.T. Thornton and A. Rex. Any other edition is also acceptable, but there are a few differences between the texts.

There are textbooks on the Library Reserve:

2nd edition: call number "pri 16491" (two copies)

3rd edition: call number "pri 16492" (one copy)

4th edition: call number "pri 16670" (one copy)

Students Solution Manual is also on Reserve:

3rd edition: call number "pri 16506" (one copy)

Labs: All lab sections are held in the Elliott Lab wing. Labs start 6 May 2013. If you have any questions regarding the labs, please contact Dr. Alex van Netten, vannette@uvic.ca
Mr. Alex Wong, alexwong@uvic.ca

Office Hours: In Elliott 205A: Tuesdays 09:00-10:00 and Wednesdays 13:00-14:00. You can also email lefebvre@uvic.ca to make an appointment.

Course material

Course material will be distributed via the University's moodle.uvic.ca web site. This includes any slides shown in class, a detailed probable schedule of lectures and associated readings, and notes pointing to other useful resources.

Topics covered

The course covers the experimental basis of quantum mechanics, the atomic structure and wave properties of matter, the time-independent Schrödinger equation, wave functions and probability, and an introduction to the Hydrogen atom. The topics covered correspond to chapters 1, 3, 4, 5, 6, 7 of the text, and a brief review of relativistic energy and momentum (from chapter 2).

Required course

Prerequisites: PHYS 112; or PHYS 120 and 130; or PHYS 122 and 125.

Pre- or co-requisites: MATH 200, 201

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Keys to success

- Attend lectures and labs.
- Read the text.
- Do assignments and lab reports.
- Study.

Marking and Grades

To obtain credit in the course you must:

- complete all labs and have satisfactory standing in the labs;
- have at least 50% on your final mark, which is obtained from the following marking scheme:

Assignments	15%	approximately 10 assignments
Labs	20%	all labs must be completed
Midterm exam	20%	50 min exam, Friday 28 June 2013
Final exam	45%	3 hour exam, August exam period

Assignments will typically be due one week after the issue date. Late assignments are not accepted.

You cannot pass the course without passing the labs; this is a department regulation and it cannot be waived. If you do not pass the labs, your overall percentage grade will be at most 49%.

The final grade follows the Senate-approved percentage grading scheme for conversion of numerical scores to letter grades:

A+	90-100	B+	77-79	C+	65-69	E	40-49*
A	85-89	B	73-76	C	60-64	F	0-49
A-	80-84	B-	70-72	D	50-59	N	Not Complete

If the application of this scheme would result in grades that are judged by the instructor to be inconsistent with the University's grading descriptions (to be found on page 38 of the current Undergraduate Calendar), then the instructor will assign percentages consistent with them. The grade N is a failing grade that indicates that you did not complete the required course work.

*If you pass the labs and if your final percentage grade is equal to or greater than 40% and less than 50%, you will be assigned an E, with the possibility of a supplemental exam, if you are eligible.

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Calculator

On all examinations the only acceptable calculator is the Sharp EL-510R. It can be bought in the Bookstore for about \$10. DO NOT bring any other calculator to examinations.

Arrangements and Conduct

The instructor is willing to arrange reasonable accommodations for:

- missed exams or course deadlines due to illness or other affliction;
- conflicts between classes or examinations, and religious observances;
- similar issues.

If you anticipate missing a course requirement, you are expected to contact the instructor a reasonable amount of time in advance.

Cheating, plagiarism, and other forms of academic fraud are taken very seriously by the University and by the instructor. Please familiarize yourself with the *Policy on Academic Integrity* which can be found in the Undergraduate Calendar on pages 33-34.

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Tentative Lecture Schedule (last update 10 June 2013)

Date	Lecture Title	Text Reference
May 1	The Birth of Modern Physics	1.
May 3	The Birth of Modern Physics	1.
May 7	Review of Lorentz Transformations	2.1, 2.3 - 2.6
May 8	Review of Relativistic Kinematics	2.11 - 2.13
May 10	The Experimental Basis of Quantum Theory	3.
May 14	The Experimental Basis of Quantum Theory	3.
May 15	The Experimental Basis of Quantum Theory	3.
May 17	The Experimental Basis of Quantum Theory	3.
May 21	The Experimental Basis of Quantum Theory	3.
May 22	The Experimental Basis of Quantum Theory	3.
May 24	Structure of the Atom	4.
May 28	Structure of the Atom	4.
May 29	Structure of the Atom	4.
May 31	Structure of the Atom	4.
Jun 3-11	No UVic classes	
Jun 12	Structure of the Atom	4.
Jun 14	Structure of the Atom	4.
Jun 18	Structure of the Atom	4.
Jun 19	Wave Properties of Matter and Quantum Mechanics I	5.
Jun 21	Wave Properties of Matter and Quantum Mechanics I	5.
Jun 25	Wave Properties of Matter and Quantum Mechanics I	5.
Jun 26	Wave Properties of Matter and Quantum Mechanics I	5.
Jun 28	MIDTERM EXAM	
Jul 2	Reading Break	
Jul 3	Wave Properties of Matter and Quantum Mechanics I	5.
Jul 5	Wave Properties of Matter and Quantum Mechanics I	5.
Jul 9	Quantum Mechanics II	6.
Jul 10	Quantum Mechanics II	6.
Jul 12	Quantum Mechanics II	6.
Jul 16	Quantum Mechanics II	6.
Jul 17	Quantum Mechanics II	6.
Jul 19	Quantum Mechanics II	6.
Jul 23	Quantum Mechanics II	6.
Jul 24	Quantum Mechanics II	6.
Jul 26	The Hydrogen Atom	7.
Jul 30	The Hydrogen Atom	7.
Jul 31	The Hydrogen Atom	7.
Aug 2	The Hydrogen Atom	7.
Aug 6	The Hydrogen Atom	7.
Aug 7	Review	