

PHYSICS 3600 Course Syllabus

(Winter 2006)

Course: Optics and Photonics I
Instructor: Dr. Qiyang Chen, C-3027, 737-8878, qchen@physics.mun.ca
Class Schedule: Three times per week, 50 min for each, January 9 – April 7.
Monday, Wednesday, and Friday, 9:00 – 9:50 am at C-2045
Course Website: <http://www.physics.mun.ca/~pinglu/Dr.Chen/index/>
Password: munoptics1

Marking Policy:	Assignments	20 %
	Quiz 1	20 %
	Quiz 2	20%
	Final exam	40 %

Optics and Photonics I will provide a basic understanding of the principles of optics and photonics. Topics include: geometrical optics (thin lenses, mirrors, optical systems), two-beam and multiple-beam interference phenomena, Fraunhofer diffraction, introduction to Maxwell's Theory (reflection, transmission, and polarization), fibre-optics (optical fibres, light propagation, modes, attenuation, distortion), modulation of light waves, and optical communication systems. Prerequisites: Physics 2055 (General Physics V: Electricity & Magnetism) and Mathematics 2000 (Calculus III).

Textbook book:

Frank L. Pedrotti, S.J. and Leno S. Pedrotti, *Introduction to Optics*, Prentice Hall, Second Edition, 1993.

Topics & schedule:

- Geometrical optics
(Pedrotti, Chaps. 3, 6, 7, and 5, Assignment #1 and #2)
- Quiz 1 (tentatively Friday, February 10)
- Waves and interference
(Pedrotti, Chaps. 8, 9, 10, and 11, Assignment #3)
- Semester break, no lectures from February 20 to 23
- Diffraction
(Pedrotti, Chap. 16)
- Maxwell's theory and polarization
(Pedrotti, Chaps. 20 and 15, Assignment #4)
- Quiz 2 (tentatively Friday, March 17)
- Fibre-optics
(Pedrotti, Chap. 24)
- Modulation of light
(Pedrotti, Chap. 26, Assignment #5)
- Optical detection and systems

(Pedrotti, Chap. 2)

- Final exam (April 12 – 22)

Assignments: There will be five assignments during the semester. The homework assignments will be collected one week from the day they are handed out. Late returns will not be graded. Although students are encouraged to discuss problems and share information with one another, you must not copy someone else's homework solution. Copied assignments won't be acceptable.

Exams: There will be two quizzes and one final exam. All of them are in-class closed-books and closed-notes exams. Students will be provided with a sheet of equations. However, students should memorize some basic equations. Tentative dates for the two quizzes are: Friday, February 10 and Friday, March 17. The date for the final exam will be between April 12 to 22, to be decided by the university.

Late Policy: If serious illness prevents you from handing in an assignment on time, taking a quiz or exam, please contact the instructor ASAP to arrange a makeup. For medical-related requests to such delays, please follow the university regulations in which special documentation will be required.

Office Hours: Anytime when the door of my office (C-3027) is open. I will be in my office or lab (C1064) most of time and will be happy to discuss the material with you anytime. Often, you can send your questions via e-mail.