Physics 4500 (Electromagnetic Fields II) Course Syllabus
(Winter 2017)

Course: Electromagnetic Fields II

Instructor: Prof. Qiying Chen, Department of Physics & Physical Oceanography, Memorial University of Newfoundland
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http://www.mun.ca/physics/people/faculty/chen.php

Office Hours: Every Monday, 12:00 – 13:00, Physics Help Centre, C3071;
Every Thursday, 9:00 – 10:00, Room: C3027;
or contact instructor for other available time.

Class Schedule: 150 minutes of lectures per week.
Monday, Wednesday, and Friday, Slot 04 (11:00–11:50 am), C3067

Marking Policy: Assignments 25 %
Midterm 30 %
Final 45 %
No supplementary exam

This course covers multipole expansions, electrostatic fields as boundary value problems, polarizability of molecules in dielectric media, Clausius-Mossotti relation, gauges. Electromagnetic Waves: Poynting’s theorem, reflection and transmission of electromagnetic waves, cavity resonators, wave guides. Electromagnetic Radiation: dipoles, antennas, quantum mechanics and electro-magnetic interactions. Selected topics in electrodynamics and applied electromagnetism.
(http://www.mun.ca/regoff/calendar/sectionNo=SCI-1481)

Prerequisites: Physics 3500 (Electromagnetic Fields I) and Physics 3820 (Mathematical Physics III) or waiver approved by the instructor. Any interesting student is welcome to discuss with the instructor on the course requirements before registration.

Textbook:


Topics & Schedule:
- Overview
- Introduction
- Review on Electrostatics
- Review on Magnetostatics
- Multipole Expansion
- Electrodynamics
- Conservation Laws
- Electromagnetic Waves I
• Review I
• Midterm test (1, tentatively scheduled on February 27, 2017, 11:00 – 11:50 am)
• Electromagnetic Waves II
• Waveguides
• Potentials and Fields
• Radiation
• Relativistic electrodynamics (if time permitted)
• Review II
• Final examination (2.5 hours, date to be decided)

Assignments: There will be about five assignments during the semester.
Exams: There will be one midterm exam and one final exam. Both are close book.

Additional Note: In the case of missing the mid-term examination due to illness or bereavement (see also Section 6.7.5 Exemptions from Parts of the Evaluation of the University Calendar), the corresponding 30% will be added to the final exam, which will be worth 75%.

Use of Recording Devices in Classrooms:
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Important General Information from the University:
It is the student’s responsibility to acquaint themselves with these items. Please read:

3. Student Code of Conduct:
http://www/mun.ca/student/conduct/

6.8.2 Exemptions from Final Examinations:
http://www.mun.ca/regoff/calendar/sectionNo=REGS-0628

6.12 Academic Misconduct:
http://www.mun.ca/regoff/calendar/sectionNo=REGS-07488

Accommodations for Students with Disabilities:
http://www.mun.ca/blundon/accommodations/