Physics 2055: Electricity and Magnetism. Winter 2025

Slot 5: Monday, Wednesday, and Friday, 12:00– 12:50 p.m. Chem-Phys 2045.

Prerequisite: PHYS 1051, MATH 2000

Course description on department web page:
https://www.mun.ca/physics/undergraduates/syllabus/physics-2055-electricity-and-magnetism/

Instructor: Dr. Mykhaylo (Misha) Evstigneev. Rm C-3025. Phone 864-2474.
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Preferred method of communication: course mail on Brightspace

Office hours: Fri, 1-3 p.m.

Course web page: See Brightspace

Course textbook

H.D. Young and R.A. Freedman. University Physics with Modern Physics. 15th edition. Pearson, 2019.

Supplementary resource: PHYS2055 video lectures by Dr. Kelly Shorlin
https://www.youtube.com/watch?v=JcIBQ_IKe88&list=PLIsI8L-jAhBtVEbBrupAKzdWbj7yZfgCO

Course Outline (~2 lectures per topic)

Part 1: Electric charge, field, and potential (to be covered in midterm 1 and final exam
1. Electric charge and electric field (Chapter 21)
2. Gauss' law (Chapter 22)
3. Electric potential (Chapter 23)
4. Current, resistance, and electromotive force (Chapter 25)
5. Capacitance and dielectrics (Chapter 24)

Part 2: Circuits, magnetic field, induction (to be covered in midterm 2 and final exam)
6. Direct-current circuits (Chapter 26)
7. Magnetic field and magnetic forces (Chapter 27)
8. Sources of magnetic field (Chapter 28)
9. Electromagnetic induction (Chapter 29)
10. Inductance (Chapter 30)

Part 3: AC current, electromagnetic waves, light (to be covered in final exam)
11. Alternating current (Chapter 31)
12. Electromagnetic waves (Chapter 32)
13. The nature and propagation of light (Chapter 33)
14. Geometric optics (Chapter 34)

Mode of delivery. You are expected to familiarize yourselves with the content of the upcoming lecture before each meeting by reading the textbook. In the meetings, I will briefly review the pertinent theoretical material, answer your questions, and discuss the solution of the relevant problems. Questions emailed to me before the meeting will be given first priority.

Method of Evaluation

Labs	20 %
Homework assignments (weekly)	10 %
Midterm test 1 (Wed. Feb. 5)	15 %
Midterm test 2 (Wed, Mar. 19)	15 %
Final exam (TBA)	40 %

There will be 10 homework assignments each worth 1% of the final mark. Midterm exams will be conducted at the usual lecture time and place. The date of the final exam will be announced at the end of the semester. No supplementary exam will be provided.

Use of assistive tool. Feel free to use AI or any other learning tools for your homework assignments. Midterms and the final exam will be in the closed-book format.

Possible changes. In the case of a class disruption or cancellation, and in the case of revisions to evaluation methods, the instructor or the Head of the department will notify all students registered in the course via the course shell in Brightspace. Any necessary revisions to the evaluation methods will be made in consultation with the students registered in this course. If a student demonstrates that they would be disadvantaged by the change, then, as per 6.7.4 of the University Calendar, accommodations will be made.

Missed midterms. The midterm exams will be conducted in-class. If a student misses a midterm, its weight will be transferred to the respective part of the final exam that covers the same material as the missed midterm. Those students who still wish to write the missed midterms may consult the University Calendar, Section 6.7.5 (https://www.mun.ca/regoff/calendar/sectionNo=REGS-0601) and speak to the instructor.

Final examinations. Information about scheduling, deferral, evaluation and re-reading of the final examination script can be found in Section 6.8 of the University Calendar, see http://www.mun.ca/regoff/calendar/sectionNo=REGS-0628 .

Accommodations for students with disabilities are provided within the scope of the University Policies (www.mun.ca/policy/site/policy.php?id=239). Students who may need an academic accommodation are asked to initiate the request with the Glenn Roy Blundon Centre, see http://www.mun.ca/blundon/.

Use of recording devices. The lectures, displays, and all material delivered or provided in this course, including any visual or audio recording thereof, are subject to copyright owned by Dr. M. Evstigneev. It is prohibited to record or copy by any means, in any format, openly or surreptitiously, in whole or in part, in the absence of express written permission from Dr. M. Evstigneev any of the lectures or materials provided or published in any form during or from the course.

Academic misconduct. Students are expected to adhere to those principles which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. For more information regarding this policy, students should refer to Section 6.12 in the University Calendar at http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748.

Physics 2055 - Winter 2025				
Monday	Tuesday	Wednesday	Thursday	Friday
Jan/6	Jan/7 Lectures Begin	Jan/8	Jan/9	Jan/10
Jan/13 Free Period (No Labs)	Jan/14 Free Period (No Labs)	Jan/15	Jan/16 Free Period (No Labs)	Jan/17
Jan/20 Lab Introduction	Jan/21 Lab Introduction	Jan/22	Jan/23 Lab Introduction	Jan/24
Jan/27 Experiment 1 Introduction to the Oscillscope	Jan/28 Experiment 1 Introduction to the Oscillscope	Jan/29	Jan/30 Experiment 1 Introduction to the Oscillscope	Jan/31
Feb/3 Experiment 2 Ohm's Law	Feb/4 Experiment 2 Ohm's Law	Feb/5 **TERM TEST 1**	Feb/6 Experiment 2 Ohm's Law	Feb/7
Feb/10 Experiment 3 Charge and Discharge of a Capacitor	Feb/11 Experiment 3 Charge and Discharge of a Capacitor	Feb/12	Feb/13 Experiment 3 Charge and Discharge of a Capacitor	Feb/14
Feb/17 Free Period (No Labs)	Feb/18 Free Period (No Labs)	Feb/19	Feb/20 Free Period (No Labs)	Feb/21
Feb/24 Break	Feb/25 Break	Feb/26 Break	Feb/27 Break	Feb/28 Break
Mar/3 Experiment 4 RC Circuits	Mar/4 Experiment 4 RC Circuits	Mar/5	Mar/6 Experiment 4 RC Circuits	Mar/7
Mar/10 Experiment 5 Geometrical Optics / Snell's Law and Refractive Index	Mar/11 Experiment 5 Geometrical Optics / Snell's Law and Refractive Index	Mar/12	Mar/13 Experiment 5 Geometrical Optics / Snell's Law and Refractive Index	Mar/14
Mar/17 Experiment 6 Geometrical Optics / Snell's Law and Refractive Index	Mar/18 Experiment 6 Geometrical Optics / Snell's Law and Refractive Index	Mar/19 **TERM TEST 2**	Mar/20 Experiment 6 Geometrical Optics / Snell's Law and Refractive Index	Mar/21
Mar/24 Experiment 7 Resonance in LCR Series Circuit	Mar/25 Experiment 7 Resonance in LCR Series Circuit	Mar/26	Mar/27 Experiment 7 Resonance in LCR Series Circuit	Mar/28
Mar/31 **Black Box Test**	Apr/1 **Black Box Test**	Apr/2	Apr/3 **Black Box Test**	Apr/4
Apr/7 Free Period (No Labs)	Apr/8 Free Period (No Labs)	Apr/9 Lectures End	Apr/10	Apr/11
Apr/14	Apr/15	Apr/16	Apr/17	Apr/18 Good Friday