

PHYS 326: Electricity and Magnetism
September 2024 - December 2024

Instructor: Prof. Michel Lefebvre

Email: lefebvre@uvic.ca

Web: <https://www.uvic.ca/science/physics/vispa/people/faculty/lefebvre.php>

Course Webpage: [Brightspace](#)

Office Hours: See [Brightspace](#) course site calendar

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Learning outcomes

By the end of this course, students should

- have gained proficiency in the use of vector calculus in electromagnetism;
- know the principles of electrostatics that relate charge density, electric potential, and electric field;
- be able to use techniques in electrostatics — the method of images, separation of variables to solve Laplace equation, and multipole expansion;
- be able to use the concepts of polarization, bound charges, and electric displacement to solve simple electrostatic systems in matter, in particular in linear dielectrics;
- be familiar with the concept of work and energy in electrostatic systems;
- know the principles of magnetostatics that relate current density, the vector potential, and the magnetic field;
- be familiar with the concepts of magnetization, bound currents, and the auxiliary field H , and their application to simple magnetostatics systems in matter;
- know that a changing magnetic field induces an electric field;
- understand the experimental and theoretical origins of Maxwell's Equations;
- know that electromagnetic waves in vacuum are transverse waves and a consequence of Maxwell's Equations.

Midterm Exams

There will be two 50-minute midterm exams held in class during class time:

Midterm Exam 1: Tuesday 15 October
 material from Chapters 1-2-3

Midterm Exam 2: Friday 15 November
 material mainly from Chapters 4-5 (but also 1-2-3)

Note that the last day for withdrawing from first term courses without penalty of failure is Thursday 31 October. See also the list of [academic important dates](#).

Final Exam

There will a final exam during the December exam period. The date is centrally scheduled, and normally finalized in late October. **You must write the final exam to obtain credit for this course. You must exhibit adequate performance in the final exam to get credit for this course.**

Note on Exams

For the Midterm and Final exams you will be allowed to bring one page of notes, handwritten on both sides, and a calculator.

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Labs

Labs start the week of 9 September. **This first week of labs will contain introductory sessions, it is imperative that you attend. If you cannot attend, please contact your lab instructor.** There will be no labs during the week of 11-15 Nov 2024.

To obtain credit for the course, you must complete all labs and receive an overall passing grade in the lab component. You will be given scheduling information at the first lab. The due date for any experiment report is normally in the lab period one week after the experiment has been completed. You may not undertake an experiment if you have not handed the experiment report for a previous exercise. No reports will be accepted after 4 Dec 2024.

Section B02, Wed 15:30 - 18:20: instructor Rob Rempel <drempel@uvic.ca>

Section B03, Mon 18:30 - 21:20: instructor Cassandra Rosa <ckrosa@uvic.ca>

Please do not hesitate to contact your lab instructor if you have any issues with the labs.

Assignments

There will be approximately 7 assignments throughout the semester. Some assignments may include a question that has a programming and graphing component. In this case, you will be expected to submit a printout of your code along with the results of the code. You may use any programming language (note that Excel is not a programming language).

Assignments will be administered through [Brightspace](#), which means you will have to upload a pdf document clearly showing your work.

Assignment Policy:

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Marking and Grades

Your final grade is obtained from the following marking scheme:

Assignments	20%	approximately 7 assignments
Labs	20%	must be passed

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Conduct

Attendance of lectures is not required, but very strongly recommended. In Physics, a discipline norm is that **mastery** combines very good **comprehension** with the ability to **demonstrate** that comprehension under time pressure, such as in a timed exam situation. **Full engagement** with course activities includes attending lectures, submitting all lab reports, and submitting essentially all assignments.

University Regulations on Academic Integrity

Cheating, plagiarism, and other form of academic fraud are taken very seriously by the University and by the instructor. Please familiarize yourself with the University [Policy on Academic Integrity](#)