PHYS 326: Electricity and Magnetism
September 2021 - December 2021

Instructor: Prof. Michel Lefebvre
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Web: https://www.uvic.ca/science/physics/vispa/people/faculty/lefebvre.php
Office Hours: in Elliott 205A: Wednesdays 14:00 - 15:15 (starting Wed 15 Sep)
on Zoom: Tuesdays at 17:00 - 18:00 (starting Tue 14 Sep)
Course Webpage: Brightspace

This course is planned to be conducted face-to-face, in the classroom. Some lectures maybe recorded and available shortly afterward on Brightspace. All slides shown in class will be available on Brightspace. This course will be mathematically demanding; all students are assumed to have a strong basis in calculus and vector algebra.

Lectures: Tuesdays, Wednesdays and Fridays at 12:30 - 13:20, in Cornett A121
First lecture: Wednesday 8 September 2021
Tutorials: Wednesdays 08:30 - 09:20, starting 15 Sep 2021, in Cornett A121

Required courses
Prerequisites: PHYS 216 and Math 204
Pre- or Co-requisites: one of PHYS 301, MATH 342, MATH 346

Required textbook
Introduction to Electrodynamics, 4th edition, David J. Griffiths.
Older editions also acceptable, but there are a few differences between the texts.

Course content
The end goal of this course is to provide all the necessary tools and methods for understanding the properties of electromagnetic fields using vector calculus, in particular electrostatics and magnetostatics. Maxwell's equations are then introduced. Content covers Griffiths chapters 1 to 7 and, if time allows, topics selected from chapters 8 and 9:

1. *Vector analysis*, including vector calculus
2. *Electrostatics*, including the electric field, potential, and applications to conductors
3. *Potentials*, including boundary value problems, multipoles
4. *Electric fields in matter*, including polarization and dielectrics
5. *Magnetostatics*, including Biot-Savart law, Ampere's law, vector potential, and displacement current
6. *Magnetic fields in matter*, including magnetization, linear and non-linear media
7. *Electrodynamics*, including Maxwell's equations
8. Other topics, if time permits; may include conservation laws, wave propagation, energy transport

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Midterm Exams
There will be two midterm exams held in class during class time:

Midterm Exam 1:	Friday 22 October
	material from Chapters 1-2-3
Midterm Exam 2:	Tuesday 23 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 Sunday 31 October.

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.
If conditions change and we are required to move online with the lectures and exams: for exams, you would be required to log into a Zoom session; you would be required to share a webcam image, and you may be required to share your microphone or your computer screen; you would be expected to use a device which is capable of doing this; you would be expected to have a connection with enough bandwidth to support this requirement.

Labs
Labs start the week of 13 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.** All lab sections are normally held in Elliott 131.

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 6 Dec 2021.Your instructors for the PHYS326 labs are:
Section B01, Mon 14:30 - 17:20, Elliott 131: Alex Schmid <aschmid@uvic.ca>
Section B02, Wed 15:30 - 18:20, Elliott 131: Rob Rempel <drempel@uvic.ca>
Section B03, Mon 18:30 - 21:20, Elliott 131: Rob Rempel <drempel@uvic.ca>
Please do not hesitate to contact your lab instructor if you have any issues with the labs.

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Assignments
There will be approximatively 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 though Brightspace, which means you will have to upload a pdf document clearly showing your work.

Assignment Policy:
- you are allowed to collaborate on assignments, so long as your work and your solutions are your own;
- you are expected to treat your assignments with respect. Assignments that are disorganized or difficult to read will receive reduced marks at the marker's discretion;
- late assignments are not accepted.

Marking and Grades
Your final grade is obtained from the following marking scheme:

Assignments	20%
Labs	20%
Midterm exams	30%
Final exam	30%

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, then the instructor will assign percentages consistent with them.

Notwithstanding the weighting and procedure explained above:
- If you do not write the final exam you will be assigned an "N";
- If you have not submitted all lab reports you will be assign an "N";
- If you exhibit inadequate performance on the final exam you will be assign an "F";
- If you exhibit inadequate performance on the labs you will be assign an "F".

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Accommodation
Arrangement for reasonable accommodations for customarily accommodated issues will be considered, however this is contingent on your active participation: If you miss a course requirement, you are expected to contact the instructor as soon as reasonably possible, and you are expected to give the instructor advance warning of issues that you could have reasonably foreseen.

Conduct
Attendance of live lectures is not required, but 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 live lectures, submitting all lab reports, and submitting essentially all assignments.

University Regulations on Academic Integrity
Students are required to abide by all academic regulations set as set out in the University calendar, including standards of academic integrity. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties.
Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. Any action that contravenes this standard, including misrepresentation, falsification or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community.
Please familiarize yourself with the University Policy on Academic Integrity.

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