PHYS 326: Electricity and Magnetism
September 2020 - December 2020

Instructor: Prof. Michel Lefebvre
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Web: https://www.uvic.ca/science/physics/vispa/people/faculty/lefebvre.php
Office Hours: Wednesdays 13:45 - 15:15 starting 16 September 2020, on Zoom
Course Webpage: Brightspace

This course will be conducted in a primarily synchronous teaching model. This means there will be fixed time commitments for live Zoom lectures, but recorded lectures will be available shortly after each lecture. This course will be mathematically demanding; all students are assumed to have a strong basis in calculus and vector algebra.

Lectures: 12:30 - 13:20, Tuesdays, Wednesdays and Fridays, on Zoom
First lecture: Wednesday 9 September 2020
Tutorials: Wednesdays 08:30 - 09:20 starting 16 September 2020, on Zoom

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

Class materials:
Computer with a webcam
For midterm exams and final exam, you will be monitored to prevent discussing the material with others or using resources that are forbidden.
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 three midterm exams held during class time:

Midterm Exam 1:	Mon 6 Oct 2020
	material from Chapters 1 and Chapter 2 up to and including 2.3
Midterm Exam 2:	Wed 28 Oct 2020
	material mainly from Chapters 3 (but also 1-2)
Midterm Exam 3:	Fri 20 Nov 2020
	material mainly from Chapters 4-5 (but also 1-2-3)

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
Midterm and final exams are “open book”, which means you can use your textbook and all your paper notes. You will not be allowed to use any resources on a computer or on the internet.

Remote proctoring
For exams, you will be required to log into a Zoom session. You will be required to share a webcam image, and you may be required to share your microphone or your computer screen.
• You are expected to use a device which is capable of doing this;
• You are expected to have a connection with enough bandwidth to support this requirement.

Labs
Labs start the week of 14 September. All lab sections are normally held in Elliott 131, but rooms 128 and 129 will also be used to allow social distancing and safety protocols. **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 December 2020.Your instructors for the PHYS326 labs are:
Section B02: Dan Rosa <rosa@uvic.ca>
Section B03: Rob Rempel <drempel@uvic.ca>
Please do not hesitate to contact them if you have any issues with the labs.

Assignments
There will be approximatively 7 content-related assignments throughout the semester. Some assignments include questions that have a programming and graphing component to them. You will be expected to submit your code along with the results of

the code. You may use any programming language, but tutorials will use python (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".

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.

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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.

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.
Several types of academic integrity violations are covered in brief below.

Plagiarism
A student commits plagiarism when he or she:
- submits the work of another person as original work;
- gives inadequate attribution to an author or creator whose work is incorporated into the student's work, including failing to indicate clearly the inclusion of another individual's work;
- paraphrases material from a source without sufficient acknowledgement as described above.

Students who are in doubt as to what constitutes plagiarism in a particular instance should consult their course instructor.

Falsifying Material Subject to Academic Evaluation
Falsifying materials subject to academic evaluation includes, but is not limited to:
- fraudulently manipulating laboratory processes, electronic data or research data in order to achieve desired results;
- using work prepared by someone else (e.g., commercially prepared essays) and submitting it as one's own;
- citing a source from which material was not obtained;
- using a quoted reference from a non-original source while implying reference to the original source;
- submitting false records, information or data, in writing or orally;

Cheating on Assignments, Tests/Quizzes and Examinations
Cheating includes, but is not limited to:
- copying the answers or other work of another person;
- sharing information or answers when doing take-home assignments, tests and examinations except where the instructor has authorized collaborative work;
- having in an examination or test any materials or equipment other than those authorized by the examiners impersonating a candidate on an examination or test, or being assigned the results of such impersonation;
- assisting others to engage in conduct that is considered cheating.