Brock University

Physics Department

PHYS 3P36

Outline
Calendar entry

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PHYS 3P36 - Electromagnetism II
Course outline

Instructor: D.Crandles

About this course

What Brock calendar entry says:

Magnetostatics, divergence and curl of magnetic field; magnetic vector potential; magnetic field in matter; magnetization; field of a magnetic object; magnetic field inside of linear and non-linear media; electrodynamics; Ohm's Law; Fraday's law and Maxwell's Equations; energy and momentum in electrodynamics; electromagnetic waves.

Pre-requisites

» PHYS 3P35

Times and Locations

» Lectures WF 13:30-15:00 WH311

Course Goals

- to gain experience with Vector Calculus
- to develop an understanding of Maxwell's Equations
- to become familiar with the magnetic properties of materials
- to use the conservation laws in the context of electromagnetic fields
- to understand the unification of electricity, magnetism and optics

Textbook

David J. Griffiths, *Introduction to Electrodynamics, 5th Ed.*, Pearson, 2024

Course Fee

» CAD 35 (mobius software)

Important Dates Jan.- April . 2026 (FW25D3)

» First day of classes: Jan. 5
» Reading Week: Feb. 16-20
» Deadline for withdrawal without academic penalty: March 5
» Good Friday (no classes) Fri. April 3
» Last day of lectures: April 6
» Make-up for Snow Day: April 7
» Reading Day: April. 8
» Exams: April 9-22

Topics to be covered

This is an approximate list . As the course progresses, some of topics may be removed and some others may get added.

» Magnetostatics - Chapter 5
» Magnetic Fields in Matter - Chapter 6
» Electrodynamics - Chapter 7
» Conservation Laws - Chapter 8
» Electromagnetic Waves - Chapter 9

Grading and the grading scheme

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Component	% of the final mark	Notes
Class Participation	10%	Attending Lecture, submitting thoughtful questions before lectures, participating in discussions and problem solving
Mobius Quizzes	10%	Quizzes based on lectures/readings. Links to quizzes are in Brightspace. For credit, answers must be submitted BEFORE class.
Homework Assignments	20%	Approximately 1 per week submitted on Brightspace. Late assignments not accepted.
Test 1	15%	During scheduled time slot Feb. 4.
Test 2	15%	During scheduled time slot March 18.
final exam	30%	You must obtain a grade of 50% or greater on the final exam in order to pass the course. Only a calculator and one letter-size self-prepared formula sheet allowed; no complete solutions.

Expectations and responsibilities

List of expectations and responsibilities is not available

Academic Integrity

Academic misconduct is a serious offence. The principle of academic integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should consult "Academic Misconduct" section in the Undergraduate Calendar to view a fuller description of prohibited actions, and the procedures and penalties. The University takes academic misconduct extremely seriously and will follow its strict procedures to the letter in all cases.

A helpful website explains Brock's Academic Integrity Policy. Please consult it, as all students are expected to know and abide by its provisions.

Courses may use `turnitin.com`, a phrase-matching software, to verify originality of your submitted lab reports and written assignments. If you object to uploading your assignmentsr to `turnitin.com` for any reason, please notify the instructor to discuss alternative submissions.

Be aware that it is the policy of the Department of Physics that any academic misconduct including (but not limited to) possessing, using or accessing

unauthorized material in any form (including online) during final exams or assessments will *automatically* result in zero grade for the exam. Since most courses require a minimum passing grade on the final exam to complete the course, this will likely lead to a failure in the course.

FMS Penalties for Academic Misconduct

Unless otherwise specified, the Department of Physics follows the following minimum penalty guidelines for cases of academic misconduct in the Faculty of Mathematics and Science (FMS). Please be aware that the Associate Dean, Undergraduate Programs, may assign different penalties than those listed here, depending on the details of individual cases. Also note that cheating on exams carries significantly higher penalties.

First offence:
: Zero grade on the assignment, additional penalty of 100% of the weight of the assignment to be subtracted from the final grade, mandatory completion of the AZLS Academic Integrity workshop

Second offence:
: Zero grade on assignment, additional penalty of 100% of the weight of the assignment to be subtracted from the final grade, 4-month suspension

Third or additional offence:
: Zero grade in the course, 1-year suspension, permanent removal from major program.

FMS Penalties for Misconduct in Final Exams

First Offense:
: Zero grade in the course.

Second Offense:
: Zero grade in the course, 4 month suspension.

Third Offense:
: Zero grade in the course, 1 year suspension, permanent removal from major program

Fourth Offense:
: Permanent Suspension, debarment.

FMS Academic Policies

Intellectual Property Notice

All slides, presentations, handouts, tests, exams, and other course materials created by the instructor in this course are the intellectual property of the instructor. A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Brock's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.

Use of Generative AI (GenAI)

In the age of GenAI (*e.g.*, ChatGPT), our expectation of you remains the same as it ever was: original academic work, following the instructions of the assignment determined by the instructor for this course for requirements, expectations, and parameters for completion and submission of your work for grading. Therefore, the use of GenAI tools and GenAI-generated content is not allowed (unless

explicitly requested/instructed) as a resource or source for answers and discussion in submitted work. Unauthorized use of GenAI will be treated as an academic misconduct.

You probably won't find much use of GenAI in this course anyway, even when writing something like a lab report. Why? GenAI doesn't know what you did in the lab. GenAI may know a lot about the overall idea you were studying, but not how you demonstrated it. In your lab reports, your answers and discussion need to relate to what you did and the data you took.

Important dates

Please be aware of all the important dates, such as the first/last days of classes, snow days and reading week, as well as the deadline for withdrawal without academic penalty. For the current academic term, this information can be found here.

Relationship between attendance and grades

Unless the instructor announces otherwise, students are expected to attend all lectures, discussion groups, seminars, laboratory periods and examinations of the courses in which they are registered and must submit all assignments in order to pass this course.

Accommodations

The University is committed to fostering an inclusive and supportive environment for all students and will adhere to the Human Rights principles that ensure respect for dignity, individualized accommodation, inclusion and full participation. The University provides a wide range of resources to assist students, as follows:

a. If you require academic accommodation because of a disability or an ongoing health or mental health condition, please contact Student Accessibility Services at askSAS@brocku.ca or 905 688 5550 ext. 3240.
b. **Medical Self-Declaration Forms** (brief absence up to 72 hours)

   In the case of a short-term medical circumstance, if a student wishes to seek an academic consideration, please use the Medical Self-Declaration Form. The request is to be made in good faith by the student requesting the academic consideration due to a short-term condition that impacts their academic activities (e.g., participation in academic classes, delay in assignments, etc.). The period of this short-term medical condition for academic consideration must fall within a 72-hour (3 day) period. The form must be submitted to the instructor either during your brief absence or if you are too unwell, within 24 hours of the end of your 3 day brief absence.

   Medical Verification Form (extended duration)

   In cases where a student requests academic consideration due to a medical circumstance that exceeds 72 hours (three days) and will impact their academic activities (e.g., participation in academic classes, delay in assignments, etc.), or in the case of a final exam deferral, the medical verification form must be signed by the student and the health professional as per process set out in the Faculty Handbook III:9.4.1.

c. If you are experiencing mental health concerns, contact the Student Wellness and Accessibility Centre. Good2Talk is a service specifically for post-secondary students, available 24/7, 365 days a year, and provides anonymous assistance. Follow the above link or call 1-866-925-5454. For information on wellness, coping and resiliency, visit: Brock University (Mental Health).
d. If you require academic accommodation on religious grounds, you should make a formal, written request to your instructor(s) for alternative dates and/or means of satisfying requirements. Such requests should be made during the first two weeks of any given academic term, or as soon as possible after a need for accommodation is known to exist.
e. If you have been affected by sexual violence, the Human Rights & Equity Office offers support, information, reasonable accommodations, and resources through the Sexual Violence Support & Education Coordinator. For information on sexual violence, visit Brock's Sexual Assault and Harassment Policy or contact the Sexual Violence Support & Response Coordinator at humanrights@brocku.ca or 905 688 5550 ext. 4387.
f. If you have experienced discrimination or harassment on any of the above grounds, including racial, gender or other forms of discrimination, contact the Human Rights and Equity Office at humanrights@brocku.ca.

For a full description of academic policies in the Faculty of Mathematics and Science, consult brocku.ca/mathematics-science/

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