



**COURSE OUTLINE**

1. **Course:** PHYS 259, Electricity and Magnetism (for students in Engineering) - Summer 2021

Lecture 01: W 08:00 - 09:50 - Online and TR 08:00 - 10:50 - Online

Instructor	Email	Phone	Office	Hours
Shahpoor Moradi	moradis@ucalgary.ca	TBA	TBA	Zoom booking by appointment

**Online Delivery Details:**

This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

This course has a registrar scheduled, synchronous final exam. The writing time is 3 hours + 50% buffer time.

Course will contain synchronous lectures during scheduled class time (via Zoom). Thursday will include a synchronous in-class quiz (administered via TopHat).

Labatorial sessions to be conducted synchronously via Zoom.

To support remote lectures and labatorials, students are expected to have access to a computer with audio and high-speed internet. Access to a video camera is preferred to support virtual "face-to-face" discussions.

**Course Site:**

D2L: PHYS 259 L01-(Summer 2021)-Electricity and Magnetism (for students in Engineering)

**Note:** Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

**Prerequisite(s):**

Mathematics 211 and 3 units from Mathematics 265 or 275.

**Antirequisite(s):**

Credit for Physics 259 and any of 255, 323 or 355 will not be allowed.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Description/Date
TopHat	5	Reading questions asked during synchronous lectures; you only need 80% of the grade to get a full mark (result will be divided by 0.8 and capped at 100%)
Assignments (on-line Wiley Plus)	15	Assignments will be posted every week.
Labatorials	25	Labs begin on July 5th 2021.
Quizzes	20	Six on-line, synchronous, in-class quizzes on Thursdays starting from July 8.
Final	35	Synchronous final exam schedule by the registrar.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
<b>Minimum % Required</b>	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

As your term work items (labs, assignments and exams) accumulate, the marks for students in Phys 259 will be posted on D2L. The marks that appear on this website are the marks that will be used to determine each student's overall course grade. Check your marks frequently. Missing or incorrectly posted term work marks should be reported to your Instructor as soon as they are noticed. You should be prepared to produce the original work to verify the requested correction.

This course will have a final exam that will be scheduled by the Registrar. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 3 hours.

The final exam will be administered using an on-line platform. Per section [G.5](#) of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to **the end** of the registrar scheduled **synchronous** exam to support students. This way, your exam schedule accurately reflects the **start time** of the exam for any **synchronous** exams. E.g. If a **synchronous** exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the **end** time of the **synchronous** exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9 am and finish at 12pm.

#### 4. Missed Components Of Term Work:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

##### **Missed Labatorial**

Students are NOT allowed to attend a different lab section than their own. Please fill in the Missed lab request form (should be saved as an Excel file) posted on D2L (Folder: Missed course components) and submit it to the Dropbox: Missed Labs. Requests submitted more than 7 days after the date of the missed lab will not be considered. In case of special circumstances, please contact the Instructor directly via email.

##### **Missed Quiz**

Please fill in the Missed quiz form (should be saved as an Excel file) posted on D2L (Folder: Missed course components) and submit it to the Dropbox: Missed Quiz. Requests submitted more than 2 days after the date of the missed quiz will not be considered. In case of special circumstances, please contact the Instructor directly via email.

#### 5. Scheduled Out-of-Class Activities:

There are no scheduled out of class activities for this course.

## 6. Course Materials:

Recommended Textbook(s):

Halliday, Resnik & Walker, *Fundamentals of Physics, 10th Edition*. Wiley.

- WileyPlus license (see information about Practice on-line Assignments below).
- A TopHat license (free for UC students at tophat.com) and a response device such as a phone, laptop or tablet.
- Lectures will be posted on D2L (free of charge).

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

## 7. Examination Policy:

Limited aids are allowed on quizzes or examinations. Only class notes and provided formula sheet are allowed for in-class quizzes; Schulich approved calculator allowed. Collaboration with other students is forbidden and would constitute academic misconduct.

Students should also read the Calendar, [Section G](#), on Examinations.

## 8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

## 9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

## 10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

## 11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive

campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).

- b. **SU Wellness Services:** For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)  
[Student Academic Misconduct Policy](#) and [Procedure](#)  
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- e. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Physics & Astronomy, Dr. David Feder by email [phas.ahugrd@ucalgary.ca](mailto:phas.ahugrd@ucalgary.ca) or phone 403-220-8127. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). [Student Ombudsman](#), Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

## WileyPLUS On-line ASSIGNMENTS

WP assignments will be available for practice. Detailed instructions how to purchase a code and register will be provided via D2L site. WileyPLUS access to assignments doesn't require a purchase, but purchasing gives access to the online textbook.

Assignment	Available	Due date
Week 1	July 1	July 8
Week 2	July 8	July 15
Week 3	July 15	July 22
Week 4	July 22	July 29
Week 5	July 29	Aug 5
Week 6	Aug 5	Aug 12

## QUIZZES

Six quizzes will be administered on-line via TopHat. Quizzes are to be completed individually as an open book exam, but no assistance from other people. Quizzes will be single attempt only, and will take place during scheduled lecture times. No feedback will be provided until after the quiz has closed. Additional time for the attempt will be provided for students registered with SAS according to the information described in the forms. If you are concerned that you might not be able to complete the exam online (for example due to unreliable internet connection or other technical challenges), please notify your Instructor in advance at: moradis@ucalgary.ca

Quizzes	Subject	Date and time (Thursdays)
Quiz 1	Electric field	July 8, 8:00 to 8:20 am
Quiz 2	Gauss's law	July 15, 8:00 to 8:20 am
Quiz 3	Electric potential	July 22, 8:00 to 8:20 am
Quiz 4	Electric current/Magnetic field	July 29, 8:00 to 8:20 am
Quiz 5	Magnetic Field Due to a Current	Aug 5, 8:00 to 8:20 am
Quiz 6	Faraday's law and Lenz's law	Aug 5, 8:20 to 8:40 am

## LABORATORIALS

Laboratorials begin on Monday, July 5, 2021. They take place via zoom. Students will be emailed a laboratorial zoom invite prior to the scheduled lab time. Laboratorial groups (of 3-4 students) will be assigned prior to the first laboratorial, and group numbers will be communicated to students via email. In general, the format of the laboratorials is as follows: Working in groups (in breakout rooms on zoom) student make their way through a carefully written workbook crafted to help students ponder, discuss, and reinforce concepts being covered in lectures. The TA will offer assistance and guidance, and check student understanding periodically throughout the session. Laboratorials may involve a combination of demonstration, computer simulation, remote control of apparatus, data collection, and computation.

The laboratorial workbook documents will be available via D2L. Each student within the group should have a copy available for editing during the laboratorial (either printed, or PDF editable on their computer).

Dates	Labatorial
M: July 5	Labatorial 1 Electric Charges and Forces
F: July 9	Labatorial 2 Electric Fields
M: July 12	Labatorial 3 Gauss' Law
F: July 16	Labatorial 4 Electric Potential (simulation/data)
M: July 19	Labatorial 5 Capacitors
F: July 23	Labatorial 6 Magnetic Force and Torque on a Loop
M: July 26	Labatorial 7 Charge to mass ratio experiment
F: July 30	Labatorial 8 Magnetic Field of a Slinky

## PHYS 259 Lecture Schedule

Week	Dates	Textbook chapter	Topics
Week 1	June 29 - June 30	21/22	<ul style="list-style-type: none"> <li>Brief intro to the course</li> <li>Charges and Coulombs Law</li> <li>Electric Dipole and symmetry</li> <li>Electric force from discrete and continuous charge distributions</li> </ul>
Week 2	July 6 - July 8	22/23	<ul style="list-style-type: none"> <li>Electric field lines and point charges in E-fields</li> <li>Dipoles in electric fields (torque, energy), polarization</li> <li>Flux; Gauss' Law</li> <li>Spherical symmetry, Cylindrical symmetry and, Planer symmetry</li> </ul>

Week 3	July 13 - July 15	24/25	<ul style="list-style-type: none"> <li>◦ Electric potential energy &amp; Electric Potential</li> <li>◦ Charges on conductors</li> <li>◦ Capacitors and capacitance</li> <li>◦ Energy Storage in Capacitors and Electric-Field</li> <li>◦ Energy Dielectrics</li> </ul>
Week 4	July 20 - July 22	26/27/28	<ul style="list-style-type: none"> <li>◦ Electric Current, current density</li> <li>◦ Resistance, Resistivity, molecular view of Ohm's Law, Circuits, RC circuits</li> <li>◦ Magnetic Fields, Magnetic Field Lines, Motion of Charged Particles in a Magnetic Field</li> <li>◦ Cyclotrons and mass spectrometer</li> <li>◦ Hall Effect</li> </ul>
Week 5	July 27 - July 29	28/29	<ul style="list-style-type: none"> <li>◦ Magnetic Force on a Current-Carrying Conductor</li> <li>◦ Force and Torque on a Current Loop plus potential Energy (magnetic dipole)</li> <li>◦ Biot-Savart Law &amp; Ampere's Law</li> <li>◦ Coaxial cable, superposition, other examples Solenoids and toroids</li> </ul>
Week 6	Aug 3 - Aug 5	30	<ul style="list-style-type: none"> <li>◦ Faraday's Law &amp; Lenz's Law</li> <li>◦ Examples and applications (motional EMF, non-conservative electric fields)</li> <li>◦ Self-inductance and Inductors</li> <li>◦ Inductors and Magnetic Field Energy</li> <li>◦ The R-L Circuit</li> </ul>
Week 7	Aug 10 - Aug 11		<ul style="list-style-type: none"> <li>◦ Final Exam Review - Problem Solving</li> </ul>

**Course Outcomes:**

- By the end of the course, students will be expected to exploit and use symmetry to simplify physical problems in electricity and magnetism;
- Apply the principle of superposition to calculate the electric and magnetic fields of extended objects;
- Develop mathematical models of physical situations;
- Carry out calculations symbolically in terms of physical variables;
- Carry out calculations numerically, using appropriate values and their units;
- Obtain experimental data and relate them to predicted physical laws governing electricity and magnetism;
- and communicate and collaborate effectively within team environments.

Electronically Approved - Jun 27 2021 13:36

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**Department Approval**