



COURSE OUTLINE

1. **Course:** PHYS 259, Electricity and Magnetism (for students in Engineering) - Summer 2019

Lecture 01: W 08:00 - 09:50 in ENE 243 and TR 08:00 - 10:50 in ENE 243

Instructor	Email	Phone	Office	Hours
Itzel Lucio Martinez	ilucioma@ucalgary.ca	403 220-3041	SB 130	Wed 10:00-11:00, Thu 11:00-12:00

Course Site:

D2L: PHYS 259 L01- (Summer 2019) - Electricity and Magnetism (for students in Engineering)

Labatorial site: PHYS 259 B01-B02 - (Summer 2019) Labatorials

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 265 or 275 and Mathematics 211.

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 %	Date
Assignments (on-line Wiley Plus)	15	
Labatorials	15	Beginning the week of July 2
Activities	10	(5% TopHat + 5% quizzes)
Midterm examination	25	Tue, July 23, 8:00-10:50, in class
Final examination	35	To be scheduled by the registrar office

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
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

This course has a registrar scheduled final exam.

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

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see [Section M.1](#); for more information regarding the use of statutory declaration/medical notes, see [FAQ](#)). Absences must be reported within 48 hrs.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize themselves with these regulations. See also [Section E.3](#) of the University Calendar.

Missed midterm

Students who miss the midterm for a valid reason will be granted an excused absence by the instructor provided that alleged problems are supported in writing by a person in a position of authority. Students must notify the instructor by submitting the form: Missed midterm (Folder: Missed course components) to the D2L Dropbox: Missed midterm the day after the midterm, at the latest. Once the claim is substantiated, the weight of the midterm will be shifted to the final exam. Sleeping in, missing the bus, forgetting etc. is NOT considered a legitimate reason.

Missed Labatorials

Students are NOT allowed to come to a lab section different than their own. Students will be allowed to miss at most one labatorial (for valid reasons). Students must provide a supporting document and notify the instructor by submitting the form: Missed labatorial (Folder: Missed course components) to the D2L Dropbox: Missed labatorial the day after the missed lab, at the latest. Once the claim is substantiated, the final labatorial grade will be taken out of 8 labs instead of 9. In case of special circumstances, please contact the instructor (preferably come for office hours to discuss the issue).

Missed assignments

Please contact the instructor (preferably come to office hours) if you have a legitimate reason for missing a deadline for an assignment. Sleeping in, forgetting about the deadline etc. is NOT considered a legitimate reason.

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

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

In Summer 2019 the quizzes and midterm for this course session will be during regularly scheduled lectures.

6. **Course Materials:**

Recommended Textbook(s):

Halliday & Resnick, *Fundamentals of Physics, 10th Edition*: Wiley.

- WileyPlus license (see information about 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).

7. **Examination Policy:**

No aids are allowed on tests or examinations.

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.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **15 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 immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **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:

- a. **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 Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. 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) or phone at [403-220-2208](tel:403-220-2208).
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- f. **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 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.

- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](#) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **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.
- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](#) Email: suwpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](#) Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: suwpaca@ucalgary.ca.
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **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.
- l. **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.

LABORATORIALS

Laboratorials begin on Monday July 8th, 2019. They take place in ST 037. Please note that groups will be formed during the first laboratorial. In general, the format of the laboratorials is as follows: working in groups, students make their way through a carefully written workbook crafted to help students ponder, discuss, and learn concepts being covered in their lectures. TAs offer assistance and guidance, and check student understanding periodically throughout the session. Laboratorials typically involve a class demonstration, computer simulations, or some apparatus, and the tasks presented to students vary accordingly.

The Laboratorials workbook documents will be available on D2L. Students are to print out their own copies (or bring a tablet with a pen) and take them to their Laboratorials section to do their work.

PHYS 259 Labatorial schedule:

Date	Topic
Mon, July 8th	Lab 1: Electric Charges and Forces
Fri, Jul 12th	Lab 2: Electric Fields
Mon, Jul 15th	Lab 3: Gauss' Law
Fri, Jul 19th	Lab 4: Motion of Charges
Mon, Jul 22nd	Lab 5: Electric Potential
Fri, Jul 26th	Lab 6: Capacitors
Mon, Jul 29th	Lab 7: Play-Doh Resistors
Fri, Aug 2nd	Lab 8: Charge to mass ratio experiment
Mon, Aug 5th	<i>University closed - Heritage day</i>
Fri, Aug 9th	Lab 9: Magnetic fields & forces

WileyPLUS On-line ASSIGNMENTS

Your text, Fundamentals of Physics by Halliday, Resnick and Walker is available in the bookstore bundled with a WileyPLUS code. You should buy the book or WileyPLUS standalone and keep this code, as it will be used to access the online homework system.

To register, please go to www.wileyplus.com logon in the top (DO NOT SEARCH FOR THE COURSE), right hand corner with your U of C email address as your username and your 8 digit student ID as your password. If you took the course last year and changed your password to something different than your student ID, the change will remain intact. For any technical support issues, go to www.wileyplus.com/support and choose the live chat option.

A new text comes bundled with a code, which will give you access to the eBook, Assignments, Tutorials, Videos, Animations and Orion, an adaptive learning self-practice system.

If you would like to purchase just WileyPLUS by itself (without the text), you can do so through the bookstore or else from www.wileyplus.com.

Lastly, if you are not able to purchase a new book or the WileyPLUS standalone, you will be able to access the homework in the Taylor Library. You will not have access to any of the other WileyPLUS materials, and must do your homework in the library, but can upgrade at any time. You will need to register as directed above, and choose the free option.

PHYS 259 Assignment schedule:

Assignment	Avialble	Due date
Assignment 0	July 2	July 10
Assignment 1	July 3	July 17
Assignment 2	July 10	July 24
Assignment 3	July 17	No due date
Practice Midterm	July 23	July 31
Assignment 4	July 24	August 7
Assignment 5	July 31	August 13
Assignment 6	August 7	
Practice Final	TBD (Aug 15-19)	

ACTIVITIES

In order to help students to better understand and learn course material there will be additional activities. Participation in activities will earn students 10% toward their overall course grade.

In class individual TopHat questions (5%), and in class quizzes (5%).

As a vehicle to encourage class participation and student interaction as well as providing instructors with rapid, in-class feedback, the TopHat system will be employed. A demonstration of this system could happen in your lecture section in the first week of

classes. TopHat questions will be broken into 2% participation and 3% accuracy.

A quizz will take place once a week at the beginning of the class. It will consist of one question regarding reading material for that week or material that has been covered that week.

The type and number of response questions you will encounter over the semester is at the sole discretion of your instructor.

PHYS 259 DETAILED LECTURE SCHEDULE

Date	Topic	Sections	Notes
Week 1 Tue 2 nd Lec 1	Introduction to course Electric Charge Charges and Coulombs law simple examples Coulomb's law in 2D Charge is conserved	21.1-21.4, 21.6	Assignment 0 opens
Wed 3 rd Lec 2	Dipole and symmetry Electric force from a finite line Electric field and symmetry	22.1-22.3	Assignment 1 opens
Thu 4 th Lec 3	Electric field due to point charge Tutorial session	22.4	
Fri 5 th	No Labatorial		
Week 2 Mon 8 th	Lab 1: Electric Charges and Forces		
Tues 9 th Lec 4	Electric field lines and point charges in E-field Dipoles in electric fields (torque, energy), polarization	22.5-22.9	
Wed 10 th Lec 5	Flux Gauss' law intro	23.1 -23.4	Assignment 1 due Assignment 2 opens
Thu 11 th Lec 6	Gauss law Tutorial session	23.4	
Fri 12 th	Lab 2: Electric Fields		
Week 3 Mon 15 th	Lab 3: Gauss' Law		
Tue 16 th Lec 7	Spherical symmetry Cylindrical and planar symmetry; applications for insulators	23.5-23.7	
Wed 17 th Lec 8	Electric Potential energy Electric potential	24.1 -24.4	Assignment 2 due Assignment 3 opens
Thu 18 th Lec 9	Calculation of the potential for insulators Equipotential surfaces, potential gradients Tutorial session	24.5-24.8	
Fri 19 th	Lab 4: Motion of charges		
Week 4 Mon 22 nd	Lab 5: Electric Potential		
Tue 23 rd Lec 10	MIDTERM		
Wed 24 th Lec 11	Properties of capacitors followed by Gauss law to	25.1-25.6 26.1-26.5	Assignment 3 due Assignment

	<p>get capacitance Energy storage in capacitors and electric-field energy Dielectrics</p> <p>Electric current, current density Resistance, resistivity, molecular view of Ohm's law</p>	27.1 -27.4	4 opens
Thu 25 th Lec 12	<p>RC Circuits</p> <p>Magnetic fields Magnetic field lines Motion of charged particles in a magnetic field Cyclotrons and mass spectrometer</p>	27.1 -27.4 28.1-28.4	
Fri 26 th	Lab 6: Capacitors		
Week 5 Mon 29 th	Lab 7: Play- Doh Resistors		
Tue 30 th Lec 13	Tutorial Hall effects with examples	28.5	
Wed 31 st Lec 14	Magnetic force on a current-carrying conductor Force and torque on a current loop plus energy (magnetic dipole)	28.6-28.8	Assignment 4 due Assignment 5 opens
Thu 1 st Lec 15	Magnetic field of a current element (Biot-Savart law) Tutorial session	29.2	
Fri 2 nd	Lab 8: Charge to mass ratio experiment		
Week 6 Mon 5 th	<i>University closed - Heritage day</i>		
Tue 6 th	Ampere's law Coaxial cable, superposition, other examples Solenoids and toroids Faraday's law Example and application	29.3-29.6 30.1-30.3	
Wed 7 th	Lenz's law Example and applications (motional EMF, non-conservative electric fields)	30.4-30.6	Assignment 5 due Assignment 6 opens
Thu 8 th	Self-inductance and Inductors Inductors and Magnetic Field Energy R-L Circuit Tutorial session	30.7-30.9	
Fri 9 th	Lab 9: Magnetic Fields & Force		
Tue 13 th	Review for final		Assignment 6 due

COURSE INCOMES:

Students coming into PHYS 259 should be able to:

- Demonstrate ability to solve the quadratic formula
- Use trigonometry and basic geometry to solve problems
- Employ basic algebraic manipulations
- Perform derivatives and integrals

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.

Department Approval:

Electronically Approved

Date: 2019-06-17 21:07