



COURSE OUTLINE

1. **Course:** PHYS 323, Optics and Electromagnetism - Fall 2019

Lecture 01: MWF 09:00 - 09:50 in ENA 101

Instructor	Email	Phone	Office	Hours
Dr Timothy Friesen	timothy.friesen@ucalgary.ca	403 220-6123	SB 513	W, 13:00 - 15:30

Course Site:

D2L: PHYS 323 L01-(Fall 2019)-Optics & Electromagnetism

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):

Physics 211 or 221 or 227 and 223; Mathematics 249 or 265 or 275.

Antirequisite(s):

Credit for Physics 323 and any of 255, 259 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
In-class TopHat	3	
Assignments (12)	25	
Laboratory (6)	20	
Midterm	22	Oct. 24th (Tent.)
Final Exam	30	TBA

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 reasons, 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" within 24 hours after the midterm. 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 Laboratory

Students are NOT allowed to come to a lab section different than their own. Please fill in the "Make-up 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". Priority for scheduling a make-up lab will be given to students who missed a lab for a legitimate reason. A supporting document should be provided when applicable. Requests submitted more than 7 days after the date of the missed lab will not be considered.

5. Scheduled Out-of-Class Activities:

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm Exam	TBA	Thursday, October 24, 2019 at 6:30 pm	2 Hours

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. Course Materials:

Required Textbook(s):

Randall Knight, *Physics for Scientists and Engineers, 4th Ed*: Pearson.

Mastering Physics Assignments: Online assignments will be employed in this course. Instructions for accessing the free or paid versions (through an existing account or a new code from the bookstore package) of Mastering Physics will be posted on D2L.

Assignments will typically be made available on Fridays. They will typically be due on Sunday evenings at 11:59 PM. To access the assignments go to <https://www.masteringphysics.com/site/login.html>. The Mastering Physics course ID will be posted on D2L.

7. Examination Policy:

Non-communicating calculators will be allowed during the midterm and final exam.

Formula sheets will be provided.

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 **10 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 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: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](#) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@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.

Tentative lecture schedule:

Week starting	Topics	Text Section
Sept. 9	Electric fields of point charges	22.4,22.5 23.1,23.2
Sept. 16	Continuous charge distributions	23.3-23.5 23.7
Sept. 23	Electric flux and Gauss' Law	24.1-24.6
Sept. 30	Ampere's Law	29.3-29.6
Oct. 7	Induced Electric Fields	33.3, 33.5, 33.6
Oct. 14	Maxwell's Equations	34.2-34.7
Oct. 21	Power and Intensity	20.5, 20.6
Oct. 28	Interference in 1D	20.7, 21.5, 21.6
Nov. 4	Diffraction Refraction	22.1-22.5
Nov. 11	Reading Week	
Nov. 18	Thin Lenses	23.4, 23.6, 23.7
Nov. 25	Spherical Mirrors	23.8, 24.1-24.3
Dec. 2	Microscopes Telescopes	24.4-24.5

Course Incomes:

This course is the natural follow-up to PHYS 223. Students should be comfortable with the concepts of electric and magnetic fields learned there. Should be comfortable working with algebra, vectors, derivatives, and integrals. Students will build on the mathematical skills developed in PHYS 223, and/or other introductory physics and math courses.

Course Outcomes:

- By the end of the course students will have built on the physical principles and mathematical skills they learned in PHYS 223 and should be able to:
- Use Gauss's law to find the electric field of a continuous charge distribution;
- Work with electric field and magnetic field vectors in three dimensions;
- Use Maxwell's equations to show how light can be explained in terms of electromagnetic waves;
- Obtain experimental data and relate them to predicted physical laws governing electricity and magnetism;
- Analyze optical systems consisting of lenses and mirrors;
- Understand the effects of constructive and destructive interference, refraction, and diffraction of light.

Department Approval:

Electronically Approved

Date: 2019-08-26 10:23

Associate Dean's Approval for out of
regular class-time activity:

Electronically Approved

Date: 2019-08-26 12:23