

UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS and ASTRONOMY
COURSE OUTLINE **Physics 323 (E&M, Optics)**

1. Lecture Sections:

Dr. Phil Langill (coordinator)

L02 : MWF 12:00 - 12:50 : EEEL 210

Office: SB 507, 220-5402

Office Hours: Each Instructor will make known their availability

Dr. Larry Lines

L01 : MWF : 09:00 – 09:50 : SA 104

Office: ES 570B, 220-2796

Course Websites: <https://blackboard.ucalgary.ca/webapps/login>

<http://phas.ucalgary.ca/courses/f13/PHYS323>

Main Physics Office: SB 605, 220-5385

2. Prerequisites: Physics 211 or 221 or 227, and 213 or 223; Applied Mathematics 217 or Mathematics 249 or 251.

Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the 2013-2014 Calendar. A student may not register in a course unless a grade at least "C-" has been obtained in each pre-requisite course; it is the responsibility of students to ensure that their registrations are in order. See <http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html> for details.

3. Grading: In determining the overall grade in the course the following weights will be used;

Assignments: 18%

Labs (5): 20%

THM (in class): 2%

Midterm Exam: 25%

Final Exam: 35%

NOTE: Students who attain an overall average exam grade of less than 40% should not expect to receive an overall course letter grade above a D. Overall course percentage grade to course letter grade conversion is discussed on the following pages

The University policy on grading and related matters is also found in the UofC Calendar. Details can be found at;
<http://www.ucalgary.ca/pubs/calendar/current/f.html>

4. Missed Components of Term Work. The regulations of the Faculty of Science pertaining to this matter are outlined in the UofC Calendar at; <http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html> It is each student's responsibility to familiarize himself/herself with these regulations. See also <http://www.ucalgary.ca/pubs/calendar/current/e-3.html>.

5. Out-of-class-time activities: Dates and times of class activities held outside of class hours:

Midterm Exam will be held on Monday Oct. 28th 18:00 – 20:00.

Students are expected to make every effort to attend this exam. If you have a legitimate conflict, you must inform the course coordinator at least 2 weeks prior to the exam so that alternative arrangements may be made for you.

6. TEXTBOOK: "*Physics for Scientists and Engineers*" 3rd Ed. R. Knight, Pearson-Addison-Wesley 2013

7. Examination Policy: Rules pertaining to the use of calculators, and other devices, during exams will be discussed in lecture.

Students are encouraged to read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>.

8. Course fees: There are no additional fees required to take Phys 323.

9. Writing across the curriculum: In this course, the quality of the student's writing in laboratory reports will factor in the evaluation of those reports. See also <http://www.ucalgary.ca/pubs/calendar/current/e-2.html>.

10. Human studies: Students in this course are not expected to participate as subjects or researchers.

See also <http://www.ucalgary.ca/pubs/calendar/current/e-5.html>.

11. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **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 K. Student Misconduct <http://www.ucalgary.ca/pubs/calendar/current/k.html> to inform yourself of definitions, processes and penalties
- (b) **ASSEMBLY POINTS in case of emergency during class time. Be sure to FAMILIARIZE YOURSELF with the information at** <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- (c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links:
Calendar entry on students with disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html>
Disability Resource Centre: <http://www.ucalgary.ca/drc>
- (d) **SAFEWALK:** Campus Security will escort individuals day or night <http://www.ucalgary.ca/security/safewalk>. Call **220-5333** for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **FREEDOM OF INFORMATION AND PRIVACY:** This course will be conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, **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 also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **STUDENT UNION INFORMATION:**
VP Academic **Phone:** 220-3911 **Email:** suypaca@ucalgary.ca.
SU Faculty Rep. **Phone:** 220-3913 **Email:** sciencerep@su.ucalgary.ca
Website: <http://www.su.ucalgary.ca/category/authors/faculty-reps>.
Student Ombudsman: <http://www.ucalgary.ca/provost/students/ombuds>
- (g) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

OTHER COURSE RELATED INFORMATION

1. TopHat Monocle 'CLICKERS'

As a vehicle to encourage class participation and student interaction as well as providing instructors with rapid, in-class feedback, the TopHat Monocle System will be employed. This is the same response system used in the Winter 2013 semester for Physics 223. A demonstration of this system could happen in your lecture section in the first week of classes. **Each lecture section will have its own TopHat course name which will be given to you by your instructor.** The first week of classes will be treated as a test period only.

This is an opportunity to answer questions in class – anonymously. The type and number of “response questions” you will encounter over the semester is at the sole discretion of your instructor. Participate and you can earn up to 2% toward your overall course grade. If students make any attempt to answer a question they get 1 mark, and if they get the answer correct they get 1 more mark. Such questions are worth 2 marks. Some of the questions asked will not have a specific correct answer and are worth 1 mark. The THM grade a student earns will be the total marks they accumulated over the semester divided by the maximum mark obtainable, times 2%. Clicker stats will be officially accumulated starting Monday Sept. 16th.

2. ASSIGNMENTS

(i) Traditional 'work it out on paper' assignments will be distributed every ~2 weeks. A hand-in box will be available in the Jr. Labs area in the basement of Science Theatres. These written assignments are due on Wednesday's at 4PM, starting Sept. 18th. Please follow the format details below so that your work can be handed back as quickly as possible after it is marked. Solutions will be posted on Blackboard.

Format of Assignments

Follow the example below as closely as possible for **the top of the first page** of your homework assignments. Please **PRINT** your name (and **UNDERLINE** your **SURNAME**). In the upper Right Hand corner of each inner page write your ID number. Number all pages as shown.

Physics 323 Fall, 2013	Assignment #__	Page 1 of __ Firstname <u> </u> <u> </u> Lastname
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Your assignment solutions should be easily legible, with diagrams carefully drawn (neatness counts!). State the laws of physics being applied where appropriate. Briefly justify important steps in your solution. Missing steps or disjointed reasoning will probably lead to a deduction in marks. It is generally best to write equations in symbols first and perform derivations using symbols. Number equations and refer to them by number. Substitute in numerical values at the very end. Underline final answers for clarity. Numerical final answers must contain correct units.

Follow these assignment guidelines or risk losing marks!

3. COURSE GRADES

As your term work items (labs, assignments and exams) accumulate, the marks for students in Phys323 will be posted on phas.ualgary.ca/phys223/. 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.

Overall Physics 323 percentages are converted into a final course letter grade using the following thresholds:

92% - 100%	A+	75% - 80%	B+	60% - 65%	C+	45% - 50%	D+
85% - 92%	A	70% - 75%	B	55% - 60%	C	40% - 45%	D
80% - 85%	A-	65% - 70%	B-	50% - 55%	C-	00% - 40%	F

Policy regarding missed elements of term work: Students who miss a lab (assignment) because of ill health, or for other valid reasons, will be granted an excused absence by their Instructor provided that alleged problems are supported in writing by a person in a position of authority (physician, counselor, etc.). Once substantiated, the student's final mark for their labs (assignments) will be calculated by averaging the revised number of labs (assignments) which are subsequently due.

Physics 323 Tentative Schedule – Fall 2013

Week of	Topics	Textbook readings	Lab
Sept 9 th	Coulomb's Law and Electric field of point charges. E of dipoles.	25.4 - 25.5 26.1 - 26.2	----
Sept 16 th	E of continuous charge distributions. Dipoles in electric fields.	26.3 – 26.5 26.7	Data Analysis
Sept 23 rd	Electric flux and Gauss's Law (Assign#1)	27.1 – 27.6	----
Sept 30 th	B produced by moving charges and current. Magnetic Dipoles. Ampere's Law	32.3 – 32.6	Travelling EM waves
Oct 7 th	Magnetic Flux and Faraday's Law Induced E and intro to Electromagnetic Waves (Assign#2)	33.3, 33.5 33.6	----
Oct 14 th	Displacement Current, Maxwell's Eqn's, EM waves and their properties, Malus's Law *** Thanksgiving on Monday 14 th – no lecture ***	34.2 – 34.7	----
Oct 21 st	Light & Sound, power and intensity. (Assign#3)	20.5, 20.6	----
Oct 28 th	Doppler Effect, Interference in 1D, Thin film interference. ***Midterm Exam – Monday Oct. 28 th at 6:00 pm ***	20.7, 21.5, 21.6	Malus's Law
Nov 4 th	Interference and Diffraction of light. (Assign#4)	22.1 – 22.5	----
Nov 11 th	Interferometers, Reflection & Refraction, Dispersion *** Reading Days – Nov. 11 th to Nov. 13 th - no lectures ***	22.6, 23.2, 23.5	----
Nov 18 th	Image Formation by Refraction. Thin Lenses. (Assign#5)	23.4, 23.6, 23.7	Concave Mirrors
Nov 25 th	Image formation by Spherical Mirrors. Lenses in combination. Cameras and the eye.	23.8, 24.1 – 24.3	----
Dec 2 nd	Microscopes, telescopes and resolution. (Assign#6)	24.4 – 24.5	Thin Lenses & Optical Instruments
	Final Exam Period: Dec. 9 th to 20 th		