

UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS AND ASTRONOMY
COURSE INFORMATION SHEET

1. Course: **Physics 259, Electricity and Magnetism** (for students in Engineering), Winter 2010

Lecture Sections:	L01: MWF 09:00 – 09:50	ENA 101	T01: R 08:30 – 09:20	SA 106	Winter 2010
	L02: MWF 11:00 – 11:50	SA 106	T02: R 11:00 – 11:50	CHC 105	Winter 2010
	L03: TR 09:30 – 10:45	ICT 122	T03: W 11:00 – 11:50	SB 103	Winter 2010
	L04: MWF 11:00 – 11:50	ST 143	T04: T 14:00 – 14:50	ST 145	Winter 2010
	L05: TR 11:00 – 12:15	SA 106	T05: M 11:00 – 11:50	SB 103	Winter 2010
	L06: TR 12:30 – 13:45	ICT 122	T06: T 15:00 – 15:50	ST 145	Winter 2010

Instructors:	L01/T01: Dr. Biel	SB 642	220-8769 or 239-7077	biel@ucalgary.ca	Office Hours: R 09:30 – 11:30
	L02/T02: Dr. Jackel	SB 627	220-4271	brian.jackel@ucalgary.ca	Office Hours: W 15:00 – 17:00
	L03/T03: Dr. Lvovsky	SB 319	220-4124	lvov@ucalgary.ca	Office Hours: T 11:00 – 13:00
	L04/T04: Dr. Stil	SB 519	220-8015	stil@ras.ucalgary.ca	Office Hours: R 14:00 – 16:00
	L05/T05: Dr. Wilson	SB 531	220-6088	wjfwilso@ucalgary.ca	Office Hours: R 14:00 – 16:00
	L06/T06: Dr. Wilson	SB 531	220-6088	wjfwilso@ucalgary.ca	Office Hours: R 14:00 – 16:00

Main Office: SB 605, 220-5385

Course Website: <http://webapps3.ucalgary.ca/~dppvan/phys259/>

2. Prerequisites: Engineering 205; Prerequisites or Corequisites: Applied Mathematics 219

Note: In Physics 259, the Faculty of Engineering prerequisite policy is applied. You are advised to contact the Engineering Faculty Office, EN C 204, if you have questions about prerequisites/corequisites.

3. The University policy on grading and related matters is described on pages 41-53 of the 2009-2010 Calendar. In determining the overall grade in the course, the following weights will be used.

Assignments (11)	10%	Midterm Exam	20%	Clickers 2%: { Usage: 1%; Answers: 1%
Laboratory experiments (6)	20%	Final Examination	48%	

There will be a Final Examination scheduled by the Registrar's Office. Students who fail the Final Examination should not expect to receive a course grade higher than D+.

4. Missed Components of Term Work. The regulations of the Faculty of Science pertaining to this matter are outlined on page 204, column 1 of the 2009-2010 Calendar. It is the student's responsibility to familiarize himself/herself with these regulations. See also the section headed "Term Work" on page 2 of these Physics 259 Course Information sheets.

5. A grade of at least C- in the laboratory portion of the course is necessary for a passing grade in the course.

6. Dates and times of class exercises held outside of class hours: **Evening midterm test Tues., February 23, 1845 – 2015.**

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

7. **TEXTBOOK:** "University Physics", 12th Edition, by Young and Freedman, Addison-Wesley.

8. **CALCULATOR POLICY:** On the midterm and the final examination, you are required to use the Schulich School of Engineering approved calculator.

IMPORTANT/SAFEWALK: Campus Security will escort individuals day or night. Call **220-5333** for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

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 the heading Student Misconduct (pages 49-53 for 2009-2010).

FOIP: This course will be conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). 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.

STUDENT UNION INFORMATION: VP Academic **Phone:** 220-3911 **Email:** suvpaca@ucalgary.ca
SU Faculty Rep. **Phone:** 220-3913 **Email:** sciencerep@su.ucalgary.ca

WJFW 14-1-10

LABORATORIES

Labs begin Monday, January 18, 2010. Check the timetable below for the dates of your various labs. Labs take place in ST 037 and ST 038, as indicated in the Master Timetable.

PLEASE NOTE: The week after Reading Week is EVEN. (PeopleSoft may list it as odd, in which case, ignore what PeopleSoft says. The Schulich School of Engineering is defining it to be EVEN.)

Week Beginning:	Even-numbered lab sections:	Odd-numbered lab sections:
Jan. 18	Measurements and Uncertainties	---
Jan. 25	---	Measurements and Uncertainties
Feb. 1	Oscilloscope and Multimeter	---
Feb. 08	---	Oscilloscope and Multimeter
Feb. 15	NO LABS DURING READING WEEK	
Feb. 22	Kirchhoff's Laws	---
Mar. 1	---	Kirchhoff's Laws
Mar. 08	Capacitor Measurements	---
Mar. 15	---	Capacitor Measurements
Mar. 22	Current Balance	---
Apr. 2, Friday	GOOD FRIDAY - University closed. No labs.	
Mar. 29	---	Current Balance
Apr. 5	Electric Motor and Generator	---
Apr. 12	---	Electric Motor and Generator

Lab Manual Sales: Lab Manuals are on sale **Jan. 12 - 15**, from 10:00 am - 3:00 pm in **ST 039**, for **\$6.00**.

Laboratory reports are due at the end of the laboratory period.

Lab grading scheme. For each experiment, lab scores will be normalized on a section-by-section basis to a mean of 85% and a standard deviation of 7%.

Repeating students: Students repeating Physics 259 may seek to be exempted from the laboratory. Their previous lab percentage will be used in calculating the final grade for the course. Such students should apply as soon as possible at the Physics and Astronomy Departmental Office (SB 605). It is not possible to transfer lab grades of individual experiments.

TERM WORK (READ CAREFULLY)

Lab marks will be posted on the Physics 259 website within two weeks of the date you performed the experiment. **If you are in possession of a marked lab report and are firmly convinced that the grade for this report is missing, or the mark posted is incorrect, contact Dr. Wilson (see the first Information Sheet for contact information). You will be asked to produce the marked work before a correction is made.**

MasteringPHYSICS Assignment grades are stored on the MasteringPHYSICS website. We simply download them throughout the term. Once you have submitted an Assignment, the grade for that work is final.

Your course letter grade for Physics 259 will be based on the weighted average percentages of the various course components (Assignments, Laboratories, Midterm and Final Examinations) using the weighting scheme given on the first page of this course information package. The conversion from weighted average percentage to course letter grade is:

90% A+	75% B+	60% C+	47% D+
85% A	70% B	55% C	45% D
80% A-	65% B-	50% C-	<45% F

To see how you are doing on an item of term work, you can refer the percentage score to this scale, but bear in mind that (a) we do not use letter grades for individual items of term work and (b) percentage scores on labs and assignments are typically much higher than those on tests.

Policy re missed elements of term work: Students who miss term work because of ill health or for other valid reasons (must be supported by written documentation from a physician/counselor) will be granted an excused absence. In the case of labs, the average mark for labs actually performed will be substituted for each missed lab. A similar policy also applies to assignments for which there has been an excused absence. In the case of an excused absence from the midterm examination, the weight of the midterm examination will be transferred to the final examination.

MasteringPHYSICS Web-based Assignments

Assignments in Physics 259 will be performed using a web-based assignment system. Students who buy a new copy of the 12th Ed. of the textbook will discover that they have also purchased access to an electronic tutorial system, MasteringPHYSICS. Students who do not have a new copy of the textbook will have to buy an Access kit separately (available at the U of C Bookstore).

(PLEASE NOTE: In addition to the numbered credit **assignments**, MasteringPHYSICS includes six **practice tutorials** on various parts of the course. These are optional, not for credit. Make use of them if you wish to do so.)

1. All work on MasteringPHYSICS is done on the web. Feedback is immediate. Due dates are listed with each assignment (normally midnight on Sunday evenings). Due dates are followed by a one-day "grace period" in which the credit for work done after the due date/time is linearly decreased to zero over 24 hours.
2. Students must register on the website given below and enter the ID number for Physics 259 (**MPWJFW0011**). You must also give a unique multi-character passcode that is found in your Access Kit. **BE SURE TO FILL IN ALL REQUESTED INFORMATION** at the time of registration. Your name will then be added to an electronic gradebook that will keep track of your assignment marks throughout the term.

<http://session.masteringphysics.com/myct?productID=22377>

Course identification number for Physics 259, Winter, 2010: **MPWJFW0011**

Be prepared to enter your U of C ID number and your e-mail address when you register.

3. Before attempting any of the credit assignments, you should work through the non-credit pre-assignment exercise named "**Introduction to MasteringPHYSICS**". This will familiarize you with the data entry protocols for electronic assignment work. Here are some examples:

ab is entered as $a * b$

$\frac{a}{b}$ is entered as a / b or using the math palette

q_1 is entered as q_1 or using the math palette

\sqrt{u} is entered as $\text{sqrt } u$ or $\text{sqrt}(u)$ or using the math palette

\bar{A} is entered using the math palette as \bar{A}

\hat{x} is entered using the math palette as \hat{x}

3.2×10^{-9} is entered as $3.2 * 10^{-9}$ or use the math palette for the superscript

$|z|$ is entered as $|z|$

Greek letters are entered using the math palette, or writing them out: delta for δ ; Delta for Δ

Δt is entered as Δt using the math palette for Δ

ϵ_0 is entered as ϵ_0 or as epsilon_0 or using the math palette for the subscript

$\sin(\omega t)$ is entered as $\sin(\omega * t)$ or as $\sin(\text{omega} * t)$

CAUTION: If you enter an incorrect symbol, MasteringPhysics treats the answer as incorrect and deducts marks. The following four symbols are quite similar in appearance to each other; know them well, so you don't confuse them:

In the **small Greek symbol** palette, ϵ is epsilon (we use epsilon a lot in Physics 259).

In the **small Greek symbol** palette, ξ is xi (rarely if ever used in Physics 259).

In the **capital Greek symbol** palette, Σ is capital sigma (or the summation sign: $Q = \sum_i q_i$).

In the **capital Greek symbol** palette, \mathcal{E} (the last letter on the line) is a script capital E; i.e., an English letter, not a Greek letter. It is used in Physics 259 as a symbol for the electromotive force (emf).

STRONGLY SUGGESTED: Read questions very carefully. It is probably best to work things out on a sheet of paper before rushing to enter an answer on the web. Use parentheses to clarify the order of operations. Use the HELP facility on the website.

4. MasteringPHYSICS Assignments consist of a number of problems. Each problem has a number of *parts*. When a problem has been entirely completed, please remember to click the final SUBMIT PROBLEM button, or you will not receive credit for the problem.
5. Problem *parts* requiring entry of a numerical value (or an algebraic expression) will allow you an unlimited number of answer attempts before moving to the next *part*. The system indicates if you enter a wrong answer, and penalizes you 5% of the available marks for the particular *part* you are doing. (The effect of this penalty on your grade for the entire problem is much smaller. It equals $5\%/N$, where N is the total number of *parts* included in the problem.) Some questions may have hints available. There is no penalty for opening a hint, but there is a 2% bonus for each **unopened** hint. You can move to the next *part* by clicking on a "give up" button for the current *part* of the problem, but then you will not be able to return to that *part*.
6. Multiple choice questions carry with them an automatic penalty for wrong answers based on the number of answers presented on the screen for selection. For example, if there are 3 possible answers, you lose 50% for each wrong answer. If there are 4 possible answers, you lose 33% for each wrong answer, etc.
7. Finally, each problem, when completed, reports your score on it, and requires you to submit a report that enables the publisher to compile statistics on the problem for future reference. PLEASE complete ONLY the "buttons" section of the survey, **Do not** submit e-mail messages through the survey form. They will not be read.

Physics 259 Course Schedule, Winter 2010

Week	Text Reference	Topics	Assignment Due Dates
<i>Electric Forces and Fields</i>			
Jan 11-15	21.1 21.2 21.3	General Introduction to Course Electric Charge Conductors, Insulators, and Induced Charges Coulomb's Law	
Jan 18-22	21.4 21.5 21.6	Electric Field and Electric Forces Electric-Field Calculations Electric Field Lines	
			#1: 11:59 pm Sun., Jan. 24
Jan 25-Jan 29	22.1 22.2 22.3 22.4 22.5	Charge and Electric Flux Calculating Electric Flux Gauss's Law Applications of Gauss's Law Charges on Conductors	
			#2: 11:59 pm Sun., Jan. 31
<i>Electric Potential Energy and Potential; Capacitors</i>			
Feb 01-05	23.1 23.2 23.3	Electric Potential Energy Electric Potential Calculating Electric Potential	
			#3: 11:59 pm Sun., Feb. 07
Feb 08-12	23.4 23.5 24.1 24.2	Equipotential Surfaces Potential gradient Capacitors and Capacitance Capacitors in Series and Parallel	
			#4: 11:59 pm Sun., Feb. 14
<p>Monday, February 15 is Alberta Family Day - University closed (but libraries open). February 14-21 is Reading Week. No lectures. University open except Monday.</p>			
Feb 22-26	24.3 24.4 24.5	Energy Storage in Capacitors and Electric-Field Energy Dielectrics Molecular Model of Induced Charge	
<p>Tuesday, February 23 MIDTERM TEST: 18:45-20:15, covering Chapters 21, 22, 23, and 24.1–24.3 inclusive</p>			
<i>DC (Direct Current) Electric Circuits</i>			
			#5: 11:59 pm Sun., Feb. 28
Mar 01-05	25.1 25.2 25.3 25.4 25.5	Electric Current Resistivity Resistance Electromotive Force and Circuits Energy and Power in Electric Circuits	

Week	Text Reference	Topics	
Mar 08 -12	26.1 26.2 26.3 26.4 26.5	Resistors in Series and Parallel Kirchhoff's Rules Electrical Measuring Instruments R-C Circuits Power Distribution Systems	#6: 11:59 pm Sun., Mar. 7
			#7: 11:59 pm Sun., Mar. 14
<i>Magnetic Forces and Fields</i>			
Mar 15-19	27.1 27.2 27.3 27.4 27.5	Magnetism Magnetic Field Magnetic Field Lines and Magnetic Flux Motion of Charged Particles in a Magnetic Field Applications of Motion of Charged Particles	
Mar 22-26	27.6 27.7 27.9 28.1 28.2	Magnetic Force on a Current-Carrying Conductor Force and Torque on a Current Loop The Hall Effect Magnetic Field of a Moving Charge Magnetic Field of a Current Element (Biot-Savart Law).	#8: 11:59 pm Sun., Mar. 21
Mar 29-Apr 02	28.3 28.4 28.5 28.6 28.7	Magnetic Field of a Straight Current-carrying Conductor Force Between Parallel Conductors Magnetic Field of a Circular Current Loop Ampere's Law Applications of Ampere's Law	#9: 11:59 pm Sun., Mar. 28
Apr 2 is Good Friday Holiday. University Closed			
			#10: 11:59 pm Sun., Apr. 4
<i>Electromagnetic Induction</i>			
Apr 05-08	29.1 29.2 29.3 29.4 29.5*	Induction Experiments Faraday's Law Lenz's Law Motional Electromotive Force Induced Electric Fields	
Apr 12-16	29.6 30.1 30.2 30.3 30.4 29.7*	Eddy Currents Mutual Inductance Self-inductance and Inductors Inductors and Magnetic Field Energy The R-L Circuit Displacement Current and Maxwell's Equations	#11: 11:59 pm Sun., Apr. 11
			(#12: Practice assignment)

*To be covered if time permits

The last day of lectures for Winter, 2010, is Friday, April 16.