UNIVERSITY OF CALGARY
FACULTY OF SCIENCE DEPARTMENT OF PHYSICS AND ASTRONOMY
COURSE OUTLINE

1. **Course:** Physics 259, Electricity and Magnetism (for students in Engineering), Winter 2016

Lecture Sections:	**L01:** MWF 15:00 – 15:50	SB 103	**and**	R 17:00 – 17:50	KNB 132
	L02: MWF 08:00 – 08:50	CHC 119	**and**	R 08:00 – 08:50	CHC 119
	L03: MWF 09:00 – 09:50	ICT 102	**and**	T 17:00 - 17:50	KNB 132
	L04: MWF 16:00 – 16:50	KNB 132	**and**	R 14:00 – 14:50	CHC 119

Instructors:
L01: Dr. Tittel | SB 315 | 403.220.4760 | wtittel@ucalgary.ca
L02: Dr. Jackel | SB 627 | 403.220.4271 | brian.jackel@ucalgary.ca
L03: Dr. Ahmadi | SB 525 | 403. 220.5394 | nmoazzen@ucalgary.ca
L04: Dr. Stotyn | SA101C | 403-210-7594 | sean.stotyn@ucalgary.ca

Office Hours: Each Instructor will make their office time known via D2L or in lecture.

Course Coordinator: Dr. Marzena Kastyak-Ibrahim | SB 507 | 403-220-8073 |phasulc@ucalgary.ca
D2L Course: PHYS 259 L01- L04 - (Winter 2016) - Electricity and Magnetism (for students in Engineering)
Departmental Office: SB 605, 403-220-5385, phasugrd@ucalgary.ca

2. **Prerequisites:** Mathematics 275 (or 265 or Applied Mathematics 217) and Mathematics 211 **Note:** Prior completion of or concurrent registration in Mathematics 277 is highly recommended.

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.

3. **Grading:** The University policy on grading and related matters is described in Sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course, the following weights will be used:

Activities: 10% Assignments 11% Laboratories: 14%
Midterm Exam: 25% Final Examination 40% (diagnostics test 2% bonus marks)

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+. A grade of at least C– in the laboratorial portion of the course is necessary for a passing grade in the course.

Calculation of final grade in Phys 259: Percentage grades will be given for all elements of term work and examinations in Physics 259. A weighted course percentage will be calculated for each student after the final exam is written, using the weights provided above. A table of conversion from final course percentage to final course letter grade is available in the Course Information folder on the Phys 259 Blackboard site.

Percentage to letter grade conversion scale:

> = 95 %	A +	> = 75 %	B +	> = 60 %	C +	> = 47 %	D +
> = 85 %	A	> = 70 %	B	> = 55 %	C	> = 45%	D
> = 80 %	A -	> = 65 %	B -	> = 50 %	C -	< 45 %	F

4. **Missed Components of Term Work:** 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 himself/herself with these regulations. See also Section E.6 of the University Calendar.

Missed Labatorials

Students are NOT allowed to attend a different labatorial section than the one in which they are registered. A make-up lab session will be scheduled in the last week of classes. You can make-up **a total of two** labatorials. Priority for scheduling the make-up labatorials will be given to students who missed a labatorial for a legitimate reason. A note from a physician/counselor should be provided. Others will be allowed to do make-up labatorials as space permits. Please fill in the form (Excel file) posted on D2L (Folder: Labatories) and email it to Dr. Kastyak-Ibrahim, the Undergraduate Learning Coordinator at **phasulc@ucalgary.ca** in order to arrange for a make-up labatorial as soon as you know that you might need one.

Missed assignments:

Please contact Dr. Kastyak-Ibrahim, the Undergraduate Learning Coordinator at phasulc@ucalgary.ca 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.

Missed midterm:

Students who miss the midterm because of ill health, or for other valid reasons, will most often be granted an excused absence by the Course Coordinator provided that alleged problems are supported in writing by a person in a position of authority (physician, counselor, etc.). In the case of a missed exam due to illness, students must notify the Course Coordinator the day of the exam before it begins, *at the latest*.

5. **Scheduled out-of-class activities:** Dates and times of class exercises held outside of class hours: **Evening midterm test** Tuesday, February 9, 1900-2100.

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.

6. **Course Materials**: "*Fundamentals of Physics*", 10th Edition, by Halliday, Resnick and Walker, Wiley

7. **Examination Policy:** On the midterm and the final examination, you are allowed to use the Schulich School of Engineering approved calculator. Students should also read the Calendar, Section G, on Examinations.

8. OTHER IMPORTANT INFORMATION FOR STUDENTS:

(a) **Academic 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.

(b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

(c) **Student Accommodations:** 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 http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-

students-with-disabilities_0.pdf. Students needing an Accommodation in relation to their coursework or to fulfil 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 and Astronomy, Dr. Michael Wieser, by email (mwieser@ucalgary.ca) or by phone (403.220.3641).

(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 is 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: suvpaca@ucagary.ca.
SU Faculty Rep: Phone: 220-3913
Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; http://ucalgary.ca/provost/students/ombuds

(g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. 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.

(h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

(i) LABATORIALS

Labatorials begin Monday, Jan. 18th, 2016. Labatorials take place in ST 036 and 038, and students will have been assigned to a particular room, on a particular day of the week, by the Registrar's Office when enrolling in Physics 259. In general, the format of the labatorials 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. Labatorials typically involve a class demonstration, computer simulations, or some apparatus, and the tasks presented to students vary accordingly.

The labatorials workbook documents will be available on D2L. Students are to print out their own copies and take them to their labatorial section to do their work.
It is the student's responsibility to ensure their labatorials marks as posted on D2L are correct. A student's labatorial mark will not be revised in the D2L gradebook if more than 15 days has passed since the student performed the labatorial.

Physics 259 Labatorial Schedule – Winter 2016

Week	Dates	Labatorial
1	Jan 11-15	Labatorial 0 Mechanics review **(homework – bring it to the first lab)**
2	Jan 18-22	Labatorial 1 Electric Charges and Forces
3	Jan 25-29	Labatorial 2 Electric Fields
4	Feb 1-5	Labatorial 3 Gauss' Law
5	Feb 8-12	Drop-in sessions
*** Midterm Exam – Tuesday February 9th ***		
Feb 15-19 Reading Break. No lectures. University open.		
6	Feb 22-26	Labatorial 4 Electric Potential
7	Feb 29-Mar 4	Labatorial 5 Capacitors
8	Mar 7-11	Labatorial 6 Electron Current & Energy
9	Mar 14-18	Labatorial 7 Motion of Charges
Mar 25th is Good Friday – University is closed		
11	Mar 28-1	Labatorial 8 Magnetic Fields & Forces
12	Apr 4-8	Labatorial 9 Magnetic force on a Loop
13	Apr 11-13	Make-up labatorials/ Drop-in sessions

(j) WIleyPlUS On-line ASSIGNMENTS

Your text, Fundamentals of Physics by Halliday, Resnick and Walker is available in the bookstore bundled with a WileyPLUS code. It is important to keep this code, as it will be used to access the online homework system. To register, please go to www.wileyplus.com and enter the following course code where it says to register for a new class: **482215**. You could also search for your course by typing the University of Calgary into the Course Finder bar. Once there, you will be able to logon with your U of C email address and your password, which is your student ID.

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 computer lab in ST142 or Taylor Library. You will not have access to any of the other WileyPLUS materials, and must do your homework in the lab, but can upgrade at any time. You will need to register as directed above, and choose the free option.

Assignment Name	Material covered	Available for students	Due date
Assignment 1	Introduction to Wiley Plus	Monday, January 11, 2016	Monday, January 18, 2016
Assignment 2 - Winter 2016	Math Review	Wednesday, January 13, 2016	Wednesday, January 20, 2016
Assignment 3 - Winter 2016	Electric Force	Wednesday, January 20, 2016	Wednesday, January 27, 2016
Assignment 4 - Winter 2016	Electric Field and Flux	Wednesday, January 27, 2016	Wednesday, February 03, 2016
Assignment 5 - Winter 2016	Gauss's Law and Potential	Wednesday, February 03, 2016	Wednesday, February 10, 2016
Assignment 6 - Winter 2016	Capacitance	Wednesday, February 24, 2016	Wednesday, March 02, 2016
Assignment 7 - Winter 2016	Current and Resistance	Wednesday, March 02, 2016	Wednesday, March 09, 2016
Assignment 8 - Winter 2016	DC circuits	Wednesday, March 09, 2016	Wednesday, March 16, 2016
Assignment 9 - Winter 2016	Magnetic Field and Forces	Wednesday, March 16, 2016	Wednesday, March 23, 2016
Assignment 10 - Winter 2016	Magnetic fields and forces	Wednesday, March 23, 2016	Wednesday, March 30, 2016
Assignment 11 - Winter 2016	Sources of magnetic field	Wednesday, March 30, 2016	Wednesday, April 06, 2016
Assignment 12 - Winter 2016	Induction and inductors	Wednesday, April 06, 2016	Wednesday, April 13, 2016

(k) ACTIVITIES

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

- Pre-reading quizzes (due every Sunday). Quizzes will be available on Thursday on D2L (Assessments/ Quizzes)
- In class group activities and problem solving

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. 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 type and number of response questions you will encounter over the semester is at the sole discretion of your instructor. 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 mark a student gets will be the total marks they earned over the semester divided by the maximum mark obtainable, times 10%.

Physics 259 Lecture Schedule – Winter 2016

Week	Dates	Text	Topics	Labatorial
1	Jan 11-15	21.1-3 21.1 21.1 22.1 22.3-5	Electric Charge Conductors, Insulators, and Induced Charges Coulomb's Law Electric Field and Electric Field Lines Electric-Field Calculations	Mechanics review
2	Jan 18-22	23.1 23.1 23.2 23.4-6 23.3	Charge and Electric Flux Calculating Electric Flux Gauss's Law Applications of Gauss's Law Charges on Conductors	Electric charges
3	Jan 25-29	24.1 24.1 24.2-5	Electric Potential Energy Electric Potential Calculating Electric Potential	Electric fields
4	Feb 01-05	24.2 24.8 25.1-2 25.3	Equipotential Surfaces Potential gradient Capacitors and Capacitance Capacitors in Series and Parallel	Gauss's Law
*** Midterm Exam – Tuesday February 9th ***				
5	Feb 08-12	25.4 25.5 25.5 26.1-2 26.3	Energy Storage in Capacitors and Electric-Field Energy Dielectrics Molecular Model of Induced Charge DC (Direct Current) Electric Circuits Electric Current Resistance	Drop-in sessions
Feb 15-19 Reading Break. No lectures. University open.				
6	Feb 22-26	26.3 27.1 26.5 27.2 27.3 27.4	Resistivity Electromotive Force and Circuits Energy and Power in Electric Circuits Resistors in Series and Parallel the Ammeter and the Voltmeter R-C Circuits	Electric Potential
7	Feb 29-Mar 4	28.1 28.1	Magnetic Fields Magnetic Field Lines and Magnetic Flux	Capacitors
8	Mar 07-11	28.4 28.2, 5 28.6 28.7	Motion of Charged Particles in a Magnetic Field Applications of Motion of Charged Particles Magnetic Force on a Current-Carrying Conductor Force and Torque on a Current Loop	Electron current & Energy
9	Mar 14-18	28.7 28.3 28.2 29.1	DC Motors The Hall Effect Magnetic Field of a Moving Charge Magnetic Field of a Current Element (Biot-Savart Law).	Motion of charges

Week	Dates	Text	Topics	Labatorial
10	Mar 21-25	29.1 29.2 29.3 29.3 29.4	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 Electromagnetic Induction	No labatorial
Mar 25th is Good Friday – University is closed				
11	Mar 28 – Apr 1	30.1 30.1 30.1 30.1	Induction Experiments Faraday's Law Lenz's Law Motional Electromotive Force	Magnetic Fields & Forces
12	Apr 04 – 08	30.2 30.9 30.4-5 30.7	Eddy Currents Mutual Inductance Self-inductance and Inductors Inductors and Magnetic Field Energy	Magnetic Force on a Loop
13	Apr 11-13	30.6	The R-L Circuit	Make-up labs

Department Approval_____Date_____

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