

**UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS and ASTRONOMY
COURSE OUTLINE**

1. Course: **Physics 259, Electricity and Magnetism** (for students in Engineering), Winter 2014

Lecture Sections: **L01:** MWF 15:00 – 15:50 CHC 105 **and** R 17:00 – 17:50 CHC 105
L02: MWF 08:00 – 08:50 CHC 119 **and** R 08:00 – 08:50 ENA 201
L03: MWF 09:00 – 09:50 ENA 201 **and** W 13:00 – 13:50 MFH 162
L04: MWF 16:00 – 16:50 CHC 119 **and** R 14:00 – 14:50 KNB 132

Instructors: L01: **Dr. Tittel** SB 315 220-4760 wtittel@ucalgary.ca Office Hours: Tue 1400-1500
L02: **Dr. Biel** SB 504a ? biel@ucalgary.ca Office Hours: Fri 0900-1100
L03: **Dr. Stil** SB 519 220-8015 stil@ras.ucalgary.ca Office Hours: Mon 1330-1530
L04: **Dr. Brown** SB 527 220-8014 jocat@ucalgary.ca Office Hours: MWF 5-6pm

Main Office: SB 605, 220-5385 **Desire2Learn:** PHYS 259 L01-04 (Winter 2014) - Electricity And Magnetism
PHYS 259 Course Website: <http://webapps3.ucalgary.ca/~dppvan/phys259/>
MasteringPhysics course code: phys259w2014yyc

2. **Prerequisites:** Applied Mathematics 217 and Mathematics 211

Note: Prior completion of or concurrent registration in Applied Mathematics 219 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. 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:

Assignments (13)	13%	Midterm Exam	25%
Laboratories (12)	12%	Final Examination	50%
Bonus: Diagnostic Tests		2% (maximum bonus)	

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 labatorial 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.

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

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: <http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html>. It is the student's responsibility to familiarize himself/herself with these regulations. See also <http://www.ucalgary.ca/pubs/calendar/current/e-3.html>.

5. Dates and times of class exercises held outside of class hours: **Evening midterm test Thursday, February 13, 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. **TEXTBOOK:** "University Physics", 13th Edition, by Young and Freedman, Addison-Wesley.

7. **EXAMINATION POLICY:** On the midterm and the final examination, you are required to use the Schulich School of Engineering approved calculator. Students are encouraged to read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>.

Department Approval _____ Date _____

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

8. 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:** suvpaca@ucalgary.ca.
SU Faculty Rep. **Phone:** 220-3913 **Email:** sciencerep@su.ucalgary.ca
Website: <http://www.su.ucalgary.ca/home/contact.html>.
Student Ombudsman: <http://www.su.ucalgary.ca/services/student-services/student-rights.html>
- (i) **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.

BJJ 2014-01-19

Physics 259 Course Outline

Text Reference	Topics
	General Introduction to Course
	<i>Electric Forces and Fields</i>
Jan 08-10	21.1 Electric Charge 21.2 Conductors, Insulators, and Induced Charges 21.3 Coulomb's Law
Jan 13-17	21.4 Electric Field and Electric Forces. 21.5 Electric-Field Calculations 21.6 Electric Field Lines
Jan 20-24	22.1 Charge and Electric Flux 22.2 Calculating Electric Flux 22.3 Gauss's Law 22.4 Applications of Gauss's Law 22.5 Charges on Conductors
	<i>Electric Potential Energy and Potential; Capacitors</i>
Jan 27-31	23.1 Electric Potential Energy 23.2 Electric Potential 23.3 Calculating Electric Potential
Feb 03-07	23.4 Equipotential Surfaces 23.5 Potential gradient 24.1 Capacitors and Capacitance 24.2 Capacitors in Series and Parallel
Feb 10-14	24.3 Energy Storage in Capacitors and Electric-Field Energy 24.4 Dielectrics 24.5 Molecular Model of Induced Charge
	<i>DC (Direct Current) Electric Circuits</i>
	25.1 Electric Current 25.3 Resistance
Feb	25.2 Resistivity 25.4 Electromotive Force and Circuits 25.5 Energy and Power in Electric Circuits 26.1 Resistors in Series and Parallel
	26.3 Electrical Measuring Instruments 26.4 R-C Circuits

Text Reference	Topics
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Magnetic Forces and Fields

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| 27.1 | Magnetism |
| 27.2 | Magnetic Field |
| 27.3 | Magnetic Field Lines and Magnetic Flux |
| 27.4 | Motion of Charged Particles in a Magnetic Field |
| 27.5 | Applications of Motion of Charged Particles |
| 27.6 | Magnetic Force on a Current-Carrying Conductor |
| 27.7 | Force and Torque on a Current Loop |
| 27.8 | DC Motors |
| 27.9 | The Hall Effect |
| 28.1 | Magnetic Field of a Moving Charge |
| 28.2 | Magnetic Field of a Current Element (Biot-Savart Law). |
| 28.3 | Magnetic Field of a Straight Current-carrying Conductor |
| 28.4 | Force Between Parallel Conductors |
| 28.5 | Magnetic Field of a Circular Current Loop |
| 28.6 | Ampere's Law |
| 28.7 | Applications of Ampere's Law |

Electromagnetic Induction

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| 29.1 | Induction Experiments |
| 29.2 | Faraday's Law |
| 29.3 | Lenz's Law |
| 29.4 | Motional Electromotive Force |
| 29.6 | Eddy Currents |
| 30.1 | Mutual Inductance |
| 30.2 | Self-inductance and Inductors |
| 30.3 | Inductors and Magnetic Field Energy |
| 30.4 | The R-L Circuit |