UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS and ASTRONOMY
COURSE OUTLINE

1. Course: **Physics 259, Electricity and Magnetism** (for students in Engineering), Winter 2015

Lecture Sections:	**L01:** MWF	15:00 – 15:50	EDC 179	**and**	R	17:00 – 17:50	EDC 179
	L02: MWF	08:00 – 08:50	CHC 105	**and**	R	08:00 – 08:50	KNB 132
	L03: MWF	09:00 – 09:50	EDC 179	**and**	W	13:00 – 13:50	CHC 105
	L04: MWF	16:00 – 16:50	EDC 179	**and**	R	14:00 – 14:50	CHC 105

Instructors: L01:	**Dr. Ahmadi**	SB 525	220-5394	nmoazzen@ucalgary.ca	Office Hours:
L02:	**Dr. Jackel**	SB 627	220-4271	physics259@ucalgary.ca	Office Hours: Fri 0900-1100
L03:	**Dr. Hobil**	SB 539	220-6965	hobill@ucalgary.ca	Office Hours:
L04:	**Dr. Biel**	SB 503	210-9704	biel@ucalgary.ca	Office Hours:

Main Office: SB 605, 220-5385 **Desire2Learn:** PHYS 259 L01-04 (Winter 2015) - Electricity And Magnetism
MasteringPhysics course code: phys259w2015yyc

2. **Prerequisites:** Mathematrics 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. 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@ucagary.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 2015-01-01

Physics 259 Course Outline

Text Reference		Topics
		General Introduction to Course
		Math review: vectors & calculus
		Electric Forces and Fields
Jan 12-16	21.1	Electric Charge
	21.2	Conductors, Insulators, and Induced Charges
	21.3	Coulomb's Law
	21.4	Electric Field and Electric Forces.
	21.5	Electric-Field Calculations
	21.6	Electric Field Lines
Jan 19-23	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
		Electric Potential Energy and Potential; Capacitors
Jan 26-30	23.1	Electric Potential Energy
	23.2	Electric Potential
	23.3	Calculating Electric Potential
Feb 02-06	23.4	Equipotential Surfaces
	23.5	Potential gradient
	24.1	Capacitors and Capacitance
	24.2	Capacitors in Series and Parallel
Feb 09-13	24.3	Energy Storage in Capacitors and Electric-Field Energy
	24.4	Dielectrics
	24.5	Molecular Model of Induced Charge
		DC (Direct Current) Electric Circuits
	25.1	Electric Current
	25.3	Resistance

Thursday, February 13 MIDTERM TEST: 18:30-20:00, covering Chapters 21, 22 and 23.

….....Reading week.....

Feb 23-27	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
		Magnetic Forces and Fields
Mar 02-06	27.1	Magnetism
	27.2	Magnetic Field
	27.3	Magnetic Field Lines and Magnetic Flux
Mar 09-13	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
Mar 16-20	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).
Mar 23-27	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
Mar 30 –	29.1	Induction Experiments
Apr 03	29.2	Faraday's Law
	29.3	Lenz's Law
	29.4	Motional Electromotive Force
Apr 06 – 10	29.6	Eddy Currents
	30.1	Mutual Inductance
	30.2	Self-inductance and Inductors
	30.3	Inductors and Magnetic Field Energy
Apr 13-15	30.4	The R-L Circuit