

**UNIVERSITY OF CALGARY  
DEPARTMENT OF PHYSICS AND ASTRONOMY  
COURSE INFORMATION SHEET**

**Course: Physics 223, Thermodynamics, Electricity & Magnetism– Winter 2015**

**1. Instructors:**

**Dr. Jozef Biel**

L01 : MWF 8:00 - 8:50 : SB 103  
Office: SB 503, 210-9704

**Dr. Michael Wieser**

L02 : MWF : 12:00 – 12:50 : ICT 102  
Office: SB 605, 220-5385

**Dr. Phil Langill (coordinator)**

L03 : TR 12:30 - 13:45 : CHC 119  
Office: SB 507, 220-5402

**Dr. Alfredo Louro**

L04 : MWF : 16:00 – 16:50 : ICT 102  
Office: SB 533, 220-8648

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

**Main Physics Office:** SB 605, 220-5385    Websites: [D2L](#)    [Dept. of Physics and Astronomy](#)

**2. Prerequisites:** Physics 211 or 221 or 227.

Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the UofC 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 (12): 24%	Laboratorials (9): 18%	THM response Participation: 2%
Midterm Exam: 25%	Final Exam: 31%	

NOTE: Students who attain an overall average exam grade (weights as above) 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 or herself with these regulations.

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

**Midterm Exam will be held on Tuesday March 10<sup>th</sup>, from 17:30 – 20:00.**

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

**6. Textbook:** *"Physics for Scientists and Engineers" 3<sup>rd</sup> 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 223.

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

**10. Human studies:** There are no such studies associated with Physics 223.

Department Approval: \_\_\_\_\_ Date: \_\_\_\_\_

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

## 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. Read the sections of the University Calendar on 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 (FOIPPA). 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 ADVOCACY INFORMATION:**  
Website: <http://www.su.ucalgary.ca>.  
Student Ombudsman: <http://www.ucalgary.ca/provost/students/ombuds>
- (i) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** In this course you are invited to use your cell phone to participate in 'instant response' questions. However, 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.

**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.**

**STUDENT UNION INFORMATION:** VP Academic Phone: 220- 3911 Email: [suypaca@ucalgary.ca](mailto:suypaca@ucalgary.ca)  
SU Faculty Rep. Phone: 220- 3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca)

### LABATORIALS (aka LTs)

Labatorials begin Monday, Jan. 19<sup>th</sup>, 2015. As with Physics 211/221, LTs take place in ST 030 / 032 / 034, 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 223. In general, the format of the LTs 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. LTs typically involve a class demonstration, computer simulations, or some apparatus, and the tasks presented to students vary accordingly.

The LT workbook documents will be available onD2L.

Students are to print out their own copies and take them to their LT section to do their work.

It is the student's responsibility to ensure their LT marks as posted on D2L are correct. A student's LT mark will not be revised in the D2L gradebook if more than 15 days has passed since the student performed the LT.

### MASTERING PHYSICS On-line ASSIGNMENTS

**Mastering Physics assignments are due by 23:59 on Sunday nights.** The first graded assignment is due Sunday, January 18<sup>th</sup>, 2015. A practice, not for credit, MP assignment will be made available for students to attempt. There will be an assignment due Feb. 15<sup>th</sup>, but no assignment due Feb. 22<sup>nd</sup>.

\*\* As was the case in Phys211/221, all students must sign-up for one of the two specific online courses \*\*

-> One option is the MP course named Phys223 Regular W15 with corresponding course ID [MPLANGILL94578](#). This course requires a fee to be paid, but includes access to the eTextbook also. Go to <http://www.masteringphysics.com/> to register and enroll.

-> The other option is the MP course named PHYS 223 Campus W15 with corresponding course ID [langill25317](#). There is no

cost for this course, but the eTextbook is not included, and students will be required to use campus computers only. If you decide to go this route, email the course coordinator for registration and enrolment details.

### TopHat 'Instant Response' Participation

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 Fall 2014 semester for Physics 211/221. 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.**

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. Participation will earn students up to 2% toward their 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 mark a student gets will be the total marks they earned over the semester divided by the maximum mark obtainable, times 2%.

### TERM WORK GRADES

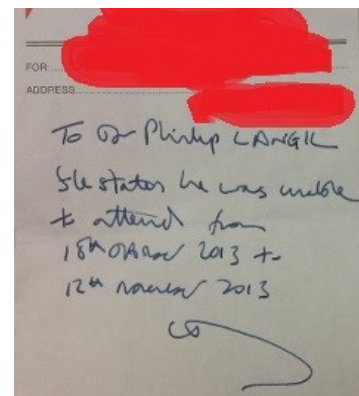
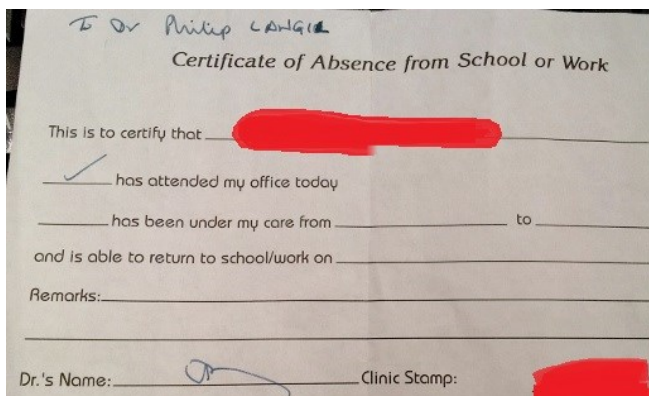
As your term work items (labs, assignments and exams) accumulate, the marks for students in Phys223 will be posted on D2L. The marks that appear on this website are the marks that will be used to determine each student's overall course grade. Check your marks frequently. **Missing or incorrectly posted 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. See the note above regarding errant LT marks.

Overall Physics 223 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 or assignment 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, *at the latest*. Once the claim of illness is substantiated, a make-up exam will be arranged.

The Doctor's notes below are examples of 'sick' notes that will NOT be accepted as they do not substantiate claims of illness.



Students who miss the midterm exam due to legitimate circumstances will be offered a make-up exam approximately one week after the regular exam. Students who miss the make-up exam due to legitimate circumstances will be offered an oral make-up exam approximately one week after the make-up exam. Students who miss all three offerings of the midterm exam should expect to receive a zero grade for their midterm exam mark.

## Physics 223 Lecture Schedule – Winter 2015

Week	Topics	Textbook readings	Labatorial
Jan 12-16 (1)	Concepts of Pressure. Gauge Pressure. Thermodynamic state variables. Temperature. Phase changes.	15.1 – 15.3 16.1–16.4	-
Jan 19-23 (2)	Ideal gases. Ideal gas processes. pV diagrams. Work in ideal gas processes. Heat.	16.5 – 16.6 17.1–17.3	Pressure
Jan 26-30 (3)	First Law of thermodynamics. Thermal properties of matter. Calorimetry. Specific heats of gases.	17.4 – 17.7	Ideal Gas
Feb 2-6 (4)	Gas particle collisions and resulting temperature and pressure.	18.1 – 18.3	First Law
Feb 9-13 (5)	Thermal energy and Specific Heat. Heat-Transfer Mechanisms.	18.4, 17.8	Temperature
Feb 16-20	<b>Reading Break. No lectures. University open.</b>	-	-
Feb 23-27 (6)	Coulomb's law. Electric field of a point charge, distributions of point charges, continuous distributions.	25.4, 25.5, 26.1 – 26.4	Electric Charges
Mar 2-6 (7)	Parallel plate capacitors. Motion of charged particles in E fields. Electric potential energy of point charges.	26.5, 26.6 28.1, 28.2	Electric Fields
Mar 9-13 (8)	Electric Potential. V in a capacitor. V due to point charges. The connection between <b>E</b> and V. <b>*** Midterm Exam – Tuesday March 10<sup>th</sup> ***</b>	28.4-28.7, 29.1-29.3	-
Mar 16-20 (9)	<b>E</b> fields of charged conductors. Capacitance and Capacitors Resistance and Ohm's law	29.4 - 29.6, 30.5	Electric Potential
Mar 23-27 (10)	DC circuits.	31.1–31.8	-
Mar 30- 2 (11)	Introduction to magnetism. Currents and magnetic fields. (April 3 <sup>rd</sup> is Good Friday – University is closed)	32.1 - 32.5	Circuits
Apr 6-10 (12)	Lorenz force. Cyclotron motion. Hall Effect. Magnetic forces on straight wires and current loops.	32.7 - 32.9	Solenoid Fields
Apr 13-15 (13)	Induced current. Motional emf. Magnetic flux. Lenz's Law	33.1 - 33.4	-