

UNIVERSITY OF CALGARY  
DEPARTMENT OF PHYSICS AND ASTRONOMY  
COURSE INFORMATION SHEET

**Course: Physics 223, Thermodynamics, Electricity & Magnetism– Winter 2010**

**Instructors:**

**Dr. Jason Donev**

L01 : MWF 8:00 - 8:50 : ENA 201  
Office: SB 149, 210-6343

**Dr. Daria Ahrensmeier**

L02 : MWF : 12:00 – 12:50 : CHC 119  
Office: SB 527A, 220-6059

**Dr. Phil Langill (coordinator)**

L03 : TR 12:30 - 13:45 : ST 140  
Office: SB 507, 220-5402

**Dr. Jason Cooper**

L04 : TR : 9:30 – 10:45 : ENE 243  
Office: SB 642, 220-8769

Office Hours: Each Instructor will make known their availability

**Main Physics Office:** SB 605, 220-5385    **Course Websites:** [blackboard.ucalgary.ca](http://blackboard.ucalgary.ca)   [phas.ucalgary.ca/phys223](http://phas.ucalgary.ca/phys223)

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

Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the 2009-2010 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.

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>

**Grading:** In determining the overall grade in the course the following weights will be used;

Mastering Physics Online Assignments (12): 16%	Labatorials (10): 16%
Midterm Exams (2): 44%	Final Exam: 24%

NOTE: Students who attain an overall average exam grade of less than 40%, where the two midterms and the final are weighted as stated above (22:22:24), should not expect to receive an overall course letter grade above a D.

**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..

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

**Midterm Exams will be held on Friday February 12<sup>th</sup>, and Friday March 19<sup>th</sup> from 17:30 – 19:30.**

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.

**TEXTBOOK:** *"Physics for Scientists and Engineers" 2<sup>nd</sup> Ed.*, R. Knight, Pearson-Addison-Wesley 2008.

**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. For more details, please carefully read this information;* <http://www.ucalgary.ca/pubs/calendar/current/k-2.html>

**FOIPP:** 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.

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

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

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

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## LABATORIALS (aka LTs)

Labotorials begin Monday, Jan. 11, 2010. 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. There is one Teaching Assistant assigned to each room, and other TAs circulating between the three rooms.

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. Some LTs involve a class demonstration, or computer simulations, or some apparatus, and the tasks presented to students vary accordingly.

We are always trying to find improved ways to help students learn the concepts presented in Physics 223, and an important aspect of this is to try and find out from students what is working well and what is not. To this end LTs also consist of a pre-test and a post-test. By comparing post-test to pre-test performance, student learning can be gauged.

All students must do the pre-test right at the start of the LT, and 5% of the LT mark is given for student participation – regardless of how well they do. All students must do the post-test before leaving the LT. It constitutes up to 5% of the LT mark, depending on how well students do. That is, the post test is graded, but the pre-test is not. The rest of the LT work is worth 90%.

The last thing students are asked to do before leaving the LT is a very short mini-survey designed to gauge student satisfaction with that day's LT. This is optional for students, but for every mini-survey you complete, a 0.05% credit will be added to your overall course grade. Complete all 10 surveys and get a full 0.5% bonus mark. In the last week of the semester a larger, more comprehensive, survey will be given to students. Again, this is optional, but students who complete this overview survey will have a 0.5% bonus credit added to their overall course grade.

**If your labotorial section is on Fridays:** note that Friday April 2<sup>nd</sup> is Good Friday and the University is closed.

**\*\*** You will have to do your LT in another TA's section earlier in the week. **\*\***

## MASTERING PHYSICS On-Line ASSIGNMENTS

**Mastering Physics assignments are due by 23:59 on Wednesday nights.** The first graded assignment is due Wednesday, January 20<sup>th</sup>, 2010. A practice, not for credit, MP assignment made available for students prior to this date.

A Student Access Kit is packaged with the textbook, or it can be bought separately in the University Bookstore. If you took Physics 211/221, your MP registration is probably still valid. Students are responsible for getting registered through the textbook's website. Our MP course name is **UOFCALGARYWINTER2010PHYS223**

## eInstruction Clickers

As a vehicle to encourage class participation and student interaction as well as providing instructors with rapid, in-class feedback, the Classroom Performance System (CPS) will be employed. Students who do not have a 'clicker' are strongly encouraged to get one from the UofC Bookstore. The set-up procedure is to go to the CPS website to register for the course and activate your clicker. Go to [www.einstruction.com](http://www.einstruction.com) and click on STUDENTS at the top. There is a huge drop-down list of institutions on the CPS system, and you first have to select 'University of Calgary'. At some point you will be asked for a 'class key'. **Each lecture section will have its own key. Ask your instructor for your class key.**

This is an opportunity to answer questions in class – anonymously, and earn some BONUS credit. The type and number of "clicker questions" you will encounter over the semester is at the sole discretion of your instructor. Participate and you can earn up to an extra 2% toward your overall course grade.

The model will be as it was in Physics 211/221. That is, 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 bonus mark a student gets will be the total clicker marks they earned divided by the maximum clicker marks 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 [phas.ucalgary.ca/phys223/](https://phas.ucalgary.ca/phys223/). 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.

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-	35% - 40%	D-
						00% - 35%	F

**Policy regarding missed elements of term work:** Students who miss a lab (assignment) because of ill health, or for other valid reasons, will be granted an excused absence by their Instructor provided that alleged problems are supported in writing by a person in a position of authority (physician, counselor, etc.). Once substantiated, the student's final mark for their labs (assignments) will be calculated by averaging the revised number of labs (assignments) which are subsequently due.

## Physics 223 Schedule – Winter 2010

Week of	Topics	Textbook readings	Labatorial
Jan 11 <sup>th</sup>	Thermodynamic state variables. Temperature. Phase changes. Ideal gases.	16.1–16.5	Pressure
Jan 18 <sup>th</sup>	Ideal gas processes. pV diagrams. Work in ideal gas processes. Heat. 1st. Law of thermodynamics.	16.6, 17.1–17.4	Ideal Gas
Jan 25 <sup>th</sup>	Thermal properties of matter. Calorimetry. Specific heats of gases. Heat-Transfer Mechanisms.	17.5 - 17.8	First Law
Feb 1 <sup>st</sup>	Gas particle collisions and resulting temperature and pressure. Thermal energy and the equipartition theorem.	18.1, 18.2, 18.3, 18.4	Temperature
Feb 8 <sup>th</sup>	Coulomb's law. Electric field of a point charge, distributions of point charges, continuous distributions. *** Midterm #1 – Friday 12 <sup>th</sup> 5:30 pm ***	26.4, 26.5, 27.2 – 27.4	Thermo Review
Feb 15 <sup>th</sup>	<b>Reading Break. No lectures. University open.</b>	All of the above	-
Feb 22 <sup>nd</sup>	Parallel plate capacitors. Motion of charged particles in E fields. Electric potential energy of point charges.	27.5, 27.6 29.1, 29.2	Electric Charges
Mar 1 <sup>st</sup>	Electric Potential. V in a capacitor. V due to point charges. The connection between <b>E</b> and V.	29.4 - 29.7, 30.3	Electric Fields
Mar 8 <sup>th</sup>	<b>E</b> fields of charged conductors. Capacitance and Capacitors	30.4, 30.5, 30.6	Electric Potential
Mar 15 <sup>th</sup>	Resistance and Ohm's law. DC circuits. ***Midterm #2 - Friday 19 <sup>th</sup> 5:30 pm ***	31.5, 32.1–32.8	Electrics Review
Mar 22 <sup>nd</sup>	Introduction to magnetism. Currents and magnetic fields.	33.1 - 33.5	Circuits
Mar 29 <sup>th</sup>	Lorentz force. Cyclotron motion. Hall Effect. Magnetic forces on straight wires and current loops. *** April 2 <sup>nd</sup> - Good Friday, University closed. ***	33.7 - 33.9	Elect. Equivalent of heat
Apr 5 <sup>th</sup>	Induced current. Motional emf. Magnetic flux in uniform <b>B</b> fields.	34.1 - 34.3	Solenoid Fields
Apr 12 <sup>th</sup>	Lenz' law. Faraday's law. Applications of induced currents.	34.4, 34.5, 34.7	Magnetics Review