



DEPARTMENT OF PHYSICS AND ASTRONOMY  
COURSE OUTLINE

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

L01: MWF 8:00 - 8:50 : SB 103 Bing Yang | SB628C | [biyang@ucalgary.ca](mailto:biyang@ucalgary.ca) | Phone: 403-220-6806

L02: MWF : 12:00 – 12:50 : ICT 102 Dr. Sean Stotyn | SA101C | [sean.stotyn@ucalgary.ca](mailto:sean.stotyn@ucalgary.ca) | Phone: 403-210-7594

L03: TR 12:30 - 13:45 : CHC 119 Dr. Sean Stotyn | SA101C | [sean.stotyn@ucalgary.ca](mailto:sean.stotyn@ucalgary.ca) | Phone: 403-210-7594

L04: MWF : 16:00 – 16:50 : ICT 102 Dr. Phil Langill | SA101B | [pplangil@ucalgary.ca](mailto:pplangil@ucalgary.ca) | Phone: 403-220-5402

Course Coordinator: Dr. Marzena Kastyak-Ibrahim | SB 507 | [phasulc@ucalgary.ca](mailto:phasulc@ucalgary.ca) | 403-220-8073

D2L Course PHYS 223 L01-L04 - (Winter 2016) - Thermodynamics, Electricity & Magnetism

Departmental Office: SB 605, 403-220-5385, [phasugrd@ucalgary.ca](mailto:phasugrd@ucalgary.ca)

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

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

**MasteringPhysics Course ID – PHYS223WINTER2016**

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:** The University policy on grading and related matters is described 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 (best 11 of 12): 22%	Labatorials (8): 18%	Activities: 10 %
Midterm Exam: 20%	Final Exam: 30%	

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>

Percentage to letter grade conversion scale:

> = 92 %	A+	> = 75 %	B+	> = 60 %	C+	> = 45 %	D+
> = 85 %	A	> = 70 %	B	> = 55 %	C	> = 40 %	D
> = 80 %	A-	> = 65 %	B-	> = 50%	C-	< 40%	F

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.

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 at; <http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html>

### Missed Laboratories

Students are NOT allowed to attend a different laboratory 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** laboratories. Priority for scheduling the make-up laboratories will be given to students who missed a laboratory for a legitimate reason. A note from a physician/counselor should be provided. Others will be allowed to do make-up laboratories as space permits. . Please fill in the form (Excel file) posted on D2L (Folder: Laboratories) and email it to Dr. Kastyak-Ibrahim, the Undergraduate Learning Coordinator at [phasulc@ucalgary.ca](mailto:phasulc@ucalgary.ca) in order to arrange for a make-up laboratory as soon as you know that you might need one.

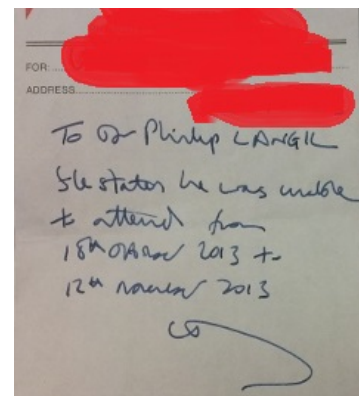
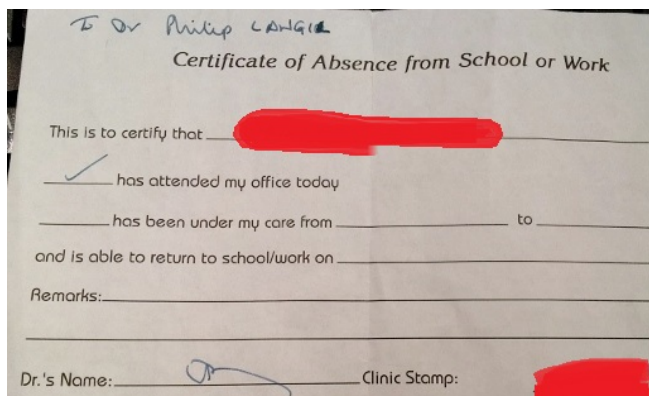
### Missed assignments:

Please contact Dr. Kastyak-Ibrahim, the Undergraduate Learning Coordinator at [phasulc@ucalgary.ca](mailto: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, *at the latest*. Once the claim of illness is substantiated, **the weight of the midterm will be shifted to the final exam**.

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



### Scheduled out-of-class activities:

Midterm Exam will be held on **Tuesday March 1<sup>st</sup>, from 19:00 – 21:30**

**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. 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.

5. **Course Materials:** *R.D. Knight, Physics for Scientists and Engineers: A Strategic Approach, 3rd Edition, Addison-Wesley.*
6. **Examination Policy:** Closed book exam and mid-term test with formula sheet provided. Rules pertaining to the use of calculators, and other devices, during exams will be discussed in lecture. Students should also read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>.
7. **Approved Mandatory and Optional Course Supplemental Fees:** None
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 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) Academic Accommodation Policy:** 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](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](mailto: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@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep. Phone: 220-3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca); Student Ombudsman

**(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) USRI:** 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](http://www.ucalgary.ca/usri)). Your responses make a difference - please participate in USRI Surveys.

**(i) STUDENT ADVOCACY INFORMATION:**

Website: <http://www.su.ucalgary.ca>. Student Ombudsman: <http://www.ucalgary.ca/provost/students/ombuds>

**(j) LABORATORIALS (aka LTs)**

Laboratorials begin Monday, Jan. 18<sup>th</sup>, 2016. 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 on D2L.** 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.

Week	Dates	Labatorial
1	Jan 11-15	NO LABATORIALS
2	Jan 18-22	Labatorial 1 Electric Charges and Forces
3	Jan 25-29	Labatorial 2 Electric Fields
4	Feb 1-5	Labatorial 3 Equipotential Lines
5	Feb 8-12	Labatorial 4 Electric Circuits
Feb 15-19 Reading Break. No lectures. University open.		
6	Feb 22-26	Drop-in sessions
7	Feb 29-Mar 4	NO LABATORIALS
*** Midterm Exam – Tuesday March 1 <sup>st</sup> 5:00 – 8:00 pm ***		
8	Mar 7-11	Labatorial 5 Magnetic Field in a Slinky
9	Mar 14-18	Labatorial 6 Ideal Gas Law
Mar 25 <sup>th</sup> is Good Friday – University is closed		
11	Mar 28- Apr 1	Labatorial 7 First Law of Thermodynamics
12	Apr 4-8	Labatorial 8 Temperature at Microscopic Level
13	Apr 11-13	Make-up labatorials/ Drop-in sessions

(k) **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>, 2015. A practice, not for credit, MP assignment will be made available for students to attempt (Assignment 0). Please see detailed schedule of the assignments below.

\*\* As was the case in Phys211/221, all students must sign-up to access Mastering Physics \*\*

**If you have a MasteringPhysics account, Sign In** at <http://www.masteringphysics.com> and enter your Username and Password. If you cannot remember your username or your password, click [Forgot your username or password?](#) and enter the email address you used to register for MasteringPhysics. Your login name and password will be sent to your email.

**If you have purchased the package** with MasteringPhysics in the bookstore:

- Go to [www.masteringphysics.com](http://www.masteringphysics.com) and click **Students** under **Register**.
- To register using the student access code above, Click **In US or Canada** under **Select Your Location**.
- Select **No, my course doesn't require an ID** Click **Next**.
- Select **Yes, I have an Access Code** Click **Next**.
- **License Agreement and Privacy Policy:** Click **I Accept** to indicate that you have read and agree to the license agreement and privacy policy.
- Select the appropriate option under "Do you have a Pearson Education account?" Continue to give the requested information until you complete the process. The **Confirmation & Summary** page confirms your registration. This information will also be emailed to you for your records. You can either click **Log In Now** or return to [www.masteringphysics.com](http://www.masteringphysics.com) later.

**If you choose to just access the MasteringPhysics assignments without purchasing access** to the study material please email Pearson at [ucphysics.mastering@gmail.com](mailto:ucphysics.mastering@gmail.com) to get an access code and registration instructions. You will be access only the assignments.

Once you have registered in MasteringPhysics, **Join a Course** by entering the MasteringPhysics Course ID – **PHYS223WINTER2016**

Week	Dates	Assignment	Available	Due Date
1	Jan 11-15	Assignment 0	Monday, January 11, 2016	Monday, January 18, 2016
2	Jan 18-22	Assignment 1	Wednesday, January 13, 2016	Wednesday, January 20, 2016
3	Jan 25-29	Assignment 2	Wednesday, January 20, 2016	Wednesday, January 27, 2016
4	Feb 1-5	Assignment 3	Wednesday, January 27, 2016	Wednesday, February 03, 2016
5	Feb 8-12	Assignment 4	Wednesday, February 03, 2016	Wednesday, February 10, 2016
<b>Feb 15-19 Reading Break. No lectures. University open.</b>				
6	Feb 22-26	Assignment 5	Wednesday, February 17, 2016	Wednesday, February 24, 2016
7	Feb 29-Mar 4	Assignment 6	Wednesday, February 24, 2016	Wednesday, March 02, 2016
<b>*** Midterm Exam – Tuesday March 1<sup>st</sup> ***</b>				
8	Mar 7-11	Assignment 7	Wednesday, March 02, 2016	Wednesday, March 09, 2016
9	Mar 14-18	Assignment 8	Wednesday, March 09, 2016	Wednesday, March 16, 2016
10	Mar 21-25	Assignment 9	Wednesday, March 16, 2016	Wednesday, March 23, 2016
<b>Mar 25<sup>th</sup> is Good Friday – University is closed</b>				
11	Mar 28- Apr 1	Assignment 10	Wednesday, March 23, 2016	Wednesday, March 30, 2016
12	Apr 4-8	Assignment 11	Wednesday, March 30, 2016	Wednesday, April 06, 2016
13	Apr 11-13	Assignment 12	Wednesday, April 06, 2016	Wednesday, April 13, 2016

## (I) ACTIVITIES

In order to help students to better understand and learn course material there will be additional 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. This is the same response system used in the Fall 2015 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 two TopHat course names which will be given to you by your instructor. One will be used for group activities, the other one for questions encouraging participation.**

The type and number of response questions you will encounter over the semester is at the sole discretion of your instructor. For questions encouraging participation, 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. For group activities (Friday class) questions asked will be a short answer type questions and will have a specific correct answer. Credits for these questions will be assigned based on the correct answer.

## Physics 223 Lecture Schedule – Winter 2016

Week	Dates	Topics	Textbook readings	Labatorial
1	Jan 11-15	Coulomb's law. Electric field of a point charge, distributions of point charges, continuous distributions.	25.4, 25.5, 26.1 – 26.4	NO LABATORIALS
2	Jan 18-22	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 Charges
3	Jan 25-29	Electric Potential. V in a capacitor. V due to point charges. The connection between E and V.	28.4-28.7, 29.1-29.3	Electric Fields
4	Feb 1-5	E fields of charged conductors. Capacitance and Capacitors Resistance and Ohm's law	29.4 - 29.6, 30.5	Electric Potential
5	Feb 8-12	DC circuits.	31.1–31.8	Circuits
<b>Feb 15-19 Reading Break. No lectures. University open.</b>				
6	Feb 22-26	Introduction to magnetism. Currents and magnetic fields.	32.1 - 32.5	Drop-in sessions
7	Feb 29-Mar 4	Induced current. Motional emf. Magnetic flux. Lenz's Law		NO LABATORIALS
<b>*** Midterm Exam – Tuesday March 1<sup>st</sup> ***</b>				
8	Mar 7-11	Lorenz force. Cyclotron motion. Hall Effect. Magnetic forces on straight wires and current loops.	32.7 - 32.9	Solenoid Fields
9	Mar 14-18	Concepts of Pressure. Gauge Pressure. Thermodynamic state variables. Temperature. Phase changes.	15.1 – 15.3	Ideal gas
10	Mar 21-25	Ideal gases. Ideal gas processes. pV diagrams. Work in ideal gas processes. Heat.	16.5 – 16.6	NO LABATORIALS
<b>Mar 25<sup>th</sup> is Good Friday – University is closed</b>				
11	Mar 28-Apr 1	First Law of thermodynamics. Thermal properties of matter. Calorimetry. Specific heats of gases.	17.4 – 17.7	First Law
12	Apr 4-8	Gas particle collisions and resulting temperature and pressure.	18.1 – 18.3	Temperature
13	Apr 11-13	Thermal energy and Specific Heat. Heat-Transfer Mechanisms.	18.4, 17.8	Make-up laboratorials

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

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

