

PHYS 124 - Particles and Waves
Fall 2014

Course room and time: CCIS 1-430, T-Th 2.00-3.20 PM

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Course webpages :

eclass.srv.ualberta.ca/portal (eClass). Please check the eClass webpage regularly for important announcements.

https://www.ualberta.ca/~pogosyan/teaching/PHYS_124/FALL_2014/

Undergraduate lab (UGL) webpage: www.physics.ualberta.ca/en/ugl.aspx

Course Description: This course is an algebra-based introduction to physics, covering the motion of matter and of waves. We will study how to mathematically model the universe, discussing topics like Newton's laws, energy, momentum, gravity, waves, and (time permitting) a taste of quantum physics.

Prerequisites: Physics 20 and Pure Mathematics 30 or Mathematics 30-1. Physics 30 is strongly recommended. Note: Credit may be obtained only for one of PHYS 124, 144, ENPH 131 or SCI 100. If one wishes to proceed to PHYS 146 after taking PHYS 124, one should achieve a minimum grade of B- in PHYS 124.

Required Textbooks :

"Physics", Custom 2nd Edition, by James S. Walker (in bookstore). the Fourth Full Edition (from which the 2nd Custom Edition is taken) will be fine.

"Mastering Physics", which is packaged with "Physics" for new textbooks. Students not wishing to purchase the textbook will need to obtain a stand-alone registration code, available in the bookstore or online (at www.masteringphysics.com).

"iClicker", available in the bookstore, or else the iClickerGO app for mobile devices (see <http://www1.iclicker.com/mobile-polling-iclicker-go> for details and pricing).

Lab manual, available in the bookstore.

Course structure: This is not a completely straightforward lecture course. Physics involves more than just memorization, so I will ask you to participate more actively in your learning throughout the course. Before each class, I will ask you to read relevant chapters from the text, and

to complete a reading quiz on the material weekly. During class, I will explain various topics, but will ask you to answer questions using your iClicker, and to discuss questions with your neighbours. You are responsible for reading the assigned chapters, which may include material that will not be covered in class but may be on exams.

Lectures : Besides traditional lecture format, lectures will involve interactive question/answer component using iClicker. Clicker Participation counts as part of your grade, and is a key component of your learning. To register your iClicker, go to <https://iclick.ctl.ualberta.ca>

If you have difficulties with registration, send me the ID of your remote and your student ID number and name (this must be done by the last day of classes to earn credit). Up to four unexcused missed classes will be forgiven.

Homework : will be done online through “Mastering Physics” system. With your access code, you should register at

<http://www.pearsonmylabandmastering.com/northamerica/masteringphysics/>.
The course ID is MPPOGOSIAN44971.

Late homework will not be accepted; the due time is typically 11:59 am of the due date indicated on the schedule. I expect students who add the class during the drop/add period to have been attending class and doing homework, so joining the class late is not an excuse for missing homework.

There are no “excused” missed homeworks, however the lowest homework grade will be dropped from your mark. Missed assignments count as zero, and thus are automatically ones with the lowest mark. (I expect 11 homeworks, in which case 10 best will be counted into the mark). This policy is designed to cover the majority of problems that lead students to ask for an excusal from a homework assignment.

Importantly, homework may include reading questions about material not yet covered in class, to facilitate reading ahead and working through the textbook.

Note that on-line homework is provided by a third-party company. Please be aware that this company will be storing assessment information about you. If you have any concerns about this, please contact me.

Labs : Laboratory work, via weekly labs, is required to pass this course. The schedule will be posted at <http://www.physics.ualberta.ca/ugl/Schedules.aspx> ; labs start on Monday Sept 15th. Missed labs must be made up during the term. Under extenuating circumstances (medical, family crisis, etc.), a student may be offered an excused absence from the labs. A maximum of two excused absences are allowed. The student must fill out an excused absence form (available in UGL shop room L2-069) and hand it to the TA. If the form is not filled out promptly (within a week of the missed lab), the missed lab will get a grade of ”0”.

Midterm exams will be held on Oct 7th and November 6th in class. All exams cover all preceding material, though the second midterm will focus on material since the first

midterm. (More exam details on pages 3 and 4 below.)

Final exam date and location is set by the Registrar; I expect it to be on Wednesday Decemeber 10th, at 2 pm. It is your responsibility to be at the correct location at the right time.

Marking Scheme :

Homework	8% (approx 11 assignments)
Class Participation	2% (iClicker)
Midterm Test I:	15% (October 7th)
Midterm Test II:	15% (November 6th)
Laboratory:	15 %
Final Exam:	45% (expected 10-Dec-2014 (Wednesday) @ 2:00 p.m.)

Final Grades: Grades are calculated from the scores of each component, averaged using the weights specified in this course syllabus. This overall mark is then used to assign course grades. Grade boundaries will be decided based on a combination of historical student performances and the instructor's expectations and judgment. Where possible, natural grade boundaries will be used. The absolute percentage scores to secure a particular grade will vary from year to year because it is not possible to write exams with consistently identical difficulty levels. The course average will be 2.62, or B-, as required by the department.

For your reminder, the correspondence between Letter Grades and Grade Point Values is

Description	Letter Grade	Grade Point Value
Excellent	A+	4.0
	A	4.0
	A-	3.7
Good	B+	3.3
	B	3.0
	B-	2.7
Satisfactory	C+	2.3
	C	2.0
	C-	1.7
Poor	D+	1.3
Minimal Pass	D	1.0
Failure	F	0.0

Course exams policies: Exams are closed book. Bring an approved calculator (see below), a pencil, a photo ID (e.g. OneCard), and one formula sheet. A suggested formula sheet will be provided to you one week before each exam, you may add to it or write your own sheet instead (both sides okay). Exams are multiple choice; multiple versions of the exam will be

used. You must give your name, student ID, and the exam version on your ScanTron to receive credit. If you must miss a midterm (e.g. due to illness), you may apply for a deferral of the midterm weight to the final exam, by making a Statutory Declaration (available from the Student Services office, CCIS). If you must miss the final, apply to your Faculty office within 48 hours of the missed final with a Statutory Declaration, to request to be allowed to take a deferred final exam. Deferred final exams will be on Saturday, January 24, 2015, 9am in CCIS L1-029. Deferral of exams is a privilege and not a right.

Past exams (without answers) are available at the exam registry.

If you are registered with SSDS, you must give me a “Letter of Introduction”, and comply with SSDS deadlines and regulations (www.ssd.ualberta.ca).

Academic Integrity: From the University Calendar: “The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behavior (online at www.governance.ualberta.ca/) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University. All forms of dishonesty are unacceptable at the University. Cheating, plagiarism and misrepresentation of facts are serious offenses. Anyone who engages in these practices will receive at minimum a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. Any offense will be reported to the Senior Associate Dean of Science who will determine the disciplinary action to be taken.”

How does academic integrity apply to the different components of this class?

Collaboration on homework and labs can increase learning, so we encourage it. Graded work, however, should represent your understanding of the material, and should be written up separately. Details:

Homework: You may work together to complete the homework, but must enter your own answers into the homework system.

Clicker questions: I intend you to collaborate on these questions; discussion of these questions will be a key element of our class experience. To supply answers for credit, you must be in class with your own clicker, or in class with your mobile device. If I or any of my TAs catch someone with multiple clickers, we may take them all for that class and submit an academic dishonesty report for everyone involved.

Lab: You will have a lab partner with whom you are expected to collaborate. Your answers on lab writeups should be your own, not a direct copy of your partner’s.

Midterms & Exams: You must work entirely by yourself with no access to course materials, besides the formula sheet that you may prepare as you like. You are expected to have photo ID

available on request. A calculator may be used, provided it is not a programmable or graphing calculator. Bringing an illegal calculator to an exam may be considered an attempt to cheat. We suggest TI-30X IIS, TI-30X IIB, TI-30XS MultiView, HP 10S, HP 30S, CASIO FX-115MS Plus, CASIO FX-115ES Plus, Sharp EL-520V or EL-520VB as good choices. Using one of these, or any calculator with a Faculty of Engineering gold calculator sticker on it, will ensure no problems. Cellphones, iPods, laptops, or any other devices with remote communication capabilities are not permitted in exams, and their possession will be considered an attempt to cheat.

Class schedule . The following is the provisional schedule for the course. Details may change throughout the course. The changes will be communicated through eClass.

Class	Date	Topic	Reading	HW	Lab this week
1	Thu, Sept 4th	Course review	1.1-1.8		
2	Tue, Sept 9th	Velocity, acceleration	2.1-2.7		
3	Thu, Sept 11th	Vectors	3.1-3.6	1	
4	Tue, Sept 16th	2D Kinematics	4.1-4.4		Graphing and SpreadSheets
5	Thu, Sept 18th	Forces, Newton's Laws	5.1-5.5	2	
6	Tue, Sept 23rd	Applying N Laws	5.6-5.7, 6.1-6.5		Kinematics
7	Thu, Sept 25th	Work, Kinetic Energy	7.1-7.3	3	
8	Tue, Sept 30st	Potential Energy	8.1-8.4		Air resistance
9	Thu, Oct 2nd	Linear Momentum	9.1-9.4	4	
10	Tue, Oct 7th	Midterm I			α -decay, energy and momentum
11	Thu, Oct 9th	Collisions	9.5-9.6	5	
12	Tue, Oct 14th	Rotational Kinematics	10.1-10.3		
13	Thu, Oct 16th	Rotational Kinematics	10.5-10.6	6	
14	Tue, Oct 21st	Rotational Dynamics	11.1-11.3		Sunspots and Sunspin
15	Thu, Oct 23rd	Angular Momentum	11.5-11.7	7	
16	Tue, Oct 28th	Gravity	12.1-12.2, 12.4-12.5		Galileo's ramp
17	Thu, Oct 30st	Oscillations	13.1-13.6	8	
18	Tue, Nov 4th	Waves	14.1-14.2, 25.3		
19	Thu, Nov 6th	Midterm II			
	Tue, Nov 11th	No classes			
20	Thu, Nov 13th	Sound	14.4-14.6	9	
21	Tue, Nov 18th	Interference	14.7-14.8, 28.1-28.2		Sound waves
22	Thu, Nov 20st	Diffraction	28.5, 28.6	10	
23	Tue, Nov 25th	Intro to Quantum Phys	30.1-30.2		Diffraction
24	Thu, Nov 27st	Intro to Quantum Phys	30.3-30.5	11	
25	Tue, Dec 2nd	Intro to Quantum Phys	30.6-30.7		