Course Syllabus

UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS and ASTRONOMY
COURSE OUTLINE

1. Course ID and number, Course Title: Physics 211, Mechanics

Lecture Sections:

Sec	Lecture			Instructor / e-mail	Instructor Office Hours and Location*	
L01	MTWF	08:00-08:50	EDC179	Dr. Jozef Biel biel@ucalgary.ca	W 09:00-10:30 EDC152	* Drop-In Tutorials will be held every Wednesday and open to all Phys 211/221 students at 09:00-11:50 in EDC152 and 13:00-18:30 in EDC172. Each Instructor will be available *at the "Drop-In Tutorial" during his/her office hours*.
L02	MWF T	12:00-12:50 11:00-11:50	ST148 SB103	Dr. Barton Hicks hicks@ucalgary.ca	W 10:30-11:50 EDC152	
L03	MWF R	16:00-16:50 16:00-16:50	CHC119 MFH162	Dr. Jozef Biel biel@ucalgary.ca	W 14:30-15:30 EDC172	
L04	M TR	16:00-16:50 15:30-16:45	CHC105 CHC105	Dr. Ian Lovatt ilovatt@mtroyal.ca	W 17:00-18:30 EDC172	

Course Coordinator: Dr. Andrew Yau Office: SB 623 Tel. No.: 220-8825 E-mail: yau@ucalgary.ca

Course Website: http://webapps3.ucalgary.ca/~dppvan/phys211-221/

Blackboard Course: PHYS 211/221 ALL - (Fall2012) - Mechanics.

Physics and Astronomy Office: SB 605 Tel. No.: 220-5385

2. PREREQUISITES: (as in Calendar entry for course)

Pure Mathematics 30 or Mathematics II (offered by Continuing Education)

NOTE Physics 30 is recommended as preparation for Physics 211. Physics 211 is not open to students with 70% or higher in Physics 30 *and* Pure Mathematics 30 *and* 60% or higher in Mathematics 31, except with Departmental permission.

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:

The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar.

To determine the overall grade in the course, each course element of term work and examinations will be given a numerical percentage grade, and an overall course mark will be calculated after the final exam, as follows.

Labatorials	12%
Assignments (MasteringPhysics)	12%
Diagnostics tests	1%
Classroom Response Activity	2%
Two Term Tests (see item 5 & 7 below)	40%
Final Examination (see item 5 & 7 below)	33%
Overall course mark	100%

The overall course mark is then converted to a letter grade using the following conversion.

A+	A	A–	B+	B	B–	C+	C	C–	D+	D	F
≥95%	≥85%	≥80%	≥75%	≥70%	≥65%	≥60%	≥55%	≥50%	≥48%	≥45%	<45%

Students who receive a weighted mean mark <40% over the two term tests and the Final Examination should not expect to receive a course grade higher than "D+".

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 to be held outside of class hours

Term Test 1: Friday, October 12, 17:00 – 20:00 (5:00-8:00 p.m.)
Term Test 2: Friday, November 16, 17:00 – 20:00 (5:00-8:00 p.m.)

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. *Such arrangements are at the discretion of the instructor and course coordinator*.

6. TEXTBOOK:

Randall D. Knight, *Physics for Scientists and Engineers: A Strategic Approach*, 3rd Ed., Addison-Wesley

7. EXAMINATION POLICY:

Examinations are closed book. Calculators are allowed but must not have wireless communication and must not be used for text storage.

Students are encouraged to read the Calendar, Section G, on Examinations: **http://www.ucalgary.ca/pubs/calendar/current/g.html**.

8. HUMAN STUDIES:

The Department of Physics and Astronomy is conducting research into the effectiveness of our teaching. This research includes evaluating student performance and improvement; see "Evaluation of Learning Outcomes in Physics 211/221" on Blackboard. See **also http://www.ucalgary.ca/pubs/calendar/current/e-5.html**.

Department Approval_____ **Date**_____

Associate Dean's Approval for out of regular class-time activity: _____ **Date:**_____

9. 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**

(g) INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.

Your cell phone should be turned off in all classes that you attend *except when its use is permitted by the instructor* (e.g. for class participation using the Top Hat Monocle system). Also, communication with other individuals via laptops, Blackberries or other devices connectable to the Internet is not allowed during class 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.

(i) ADDITIONAL COURSE INFORMATION

Several documents are posted in the Course Information folder on the Physics 211/221 Blackboard site.

- "Course Schedule" contains a week-by-week schedule of topics, text references, assignment due dates, labatorial topics, and other information.
- "Assignments and MasteringPhysics" explains the Phys 211/221 assignments, and MasteringPhysics, a web-based self-tutoring assignment system on which the Phys 211/221 assignments are based.
- "Diagnostic Test" explains the objective of the two diagnostic tests at the beginning and end of the term, respectively, and the procedure to access these tests online.
- "Using Top Hat Monocle in Phys 211/221" provides information on the use of Top Hat Monocle for classroom response activity.
- "Evaluation of Learning Outcomes in Phys 211/221" is an information sheet explaining the research project to evaluate the learning outcomes in Phys 211/221 and how you may choose to participate or not participate in the project.
- Blackboard Announcements and Email Contact:

  The Blackboard will be used for announcements of important information, such as room and seat assignments for mid-term exams and revised due dates of course work, etc during the term. Please visit the Blackboard website from time to time for important information updates.

  To contact the Course Coordinator or any Course Instructor or TA by e-mail, *please include in the Subject Line your Course ID (Phys 211 or Phys 221) and Student ID (UCID)* in addition to a brief subject title (e.g. "Request for make-up labatorial").

Course Syllabus

Physics 211/221 Fall 2012 Week-by-week Course Schedule

Wk	Week	Text	Labatorial **			Assignment		Notes/
#	start	sections *	#	Topic	Text sections *	#	due ***	Other Work
1	9/10	1.1-1.4	(No labatorial)			1	9/16	(a1), (a2)
2	9/17	1.5-1.8; 2.1-2.2	1	Units, equipment, motion diagrams	1.1-1.8	2	9/19	(b1), (c1)
3	9/24	2.3-2.7; 3.1-3.3	2	Measuring motion	1.1-1.6, 2.1-2.2, 2.4	3	9/26	
4	10/1	3.4; 4.1-4.3; 4.5	3	Motion on the Inclined plane	2.4-2.6, 3.1, 3.2	4	10/3	
5	10/8	4.5 (cont'd); 4.6	(No labatorial)			5	10/10	(d1), (e1), (e2)
6	10/15	4.7; 5.1-5.7; 6.1-6.2	4	Two-dimensional motion	4.1-4.3, 4.7	6	10/17	
7	10/22	6.3-6.6; 7.1-7.2	5	Statics (Newton's 1st Law in 2D)	5.1, 5.6-5.7	7	10/24	
8	10/29	7.3-7.5; 8.1-8.2	6	Newton's Second Law	6.1-6.3	8	10/31	
9	11/5	8.3; 8.5; 9.1-9.3	7	Newton's Third Law		9	11/7	
10	11/12	9.4-9.6	(No labatorial)			(No assignment)		(f1), (g1), (g2)
11	11/19	10.1-10.5	8	Collisions in One Dimension	7.1-7.3	10	11/21	
12	11/26	10.6-10.7; 11.1-11.5; 11.7-11.8	9	Conservation of energy and SHO	9.1-9.4, 10.6	11	11/28	(h1)
13	12/3	11.9; 12.5; 12.8	(No labatorial)		10.1-10.5	12	12/5	(h2)

* Sections/subsections in textbook that will be covered week by week (see details below)

** No labatorial in Week 1, 5, 10, and 13; open tutorials for preparation of mid-term or final exam in Week 5, 10, 13

*** Online assignments due by 23:59 (11:59 pm) on due date

(a1) Diagnostic Test #1 to be completed between 9/10 and 9/23

(a2) Assignment 1 is an Introduction to Mastering Physics

(b1) Classroom response activity counts for marks starting 9/17

(c1) Assignment 2 is Math Review.

(d1) No lecture on 10/8 (Thanksgiving Day)

(e1) 1st mid-term exam on 10/12 at 17:00-20:00

(e2) 10/8-10/12: Mid-term Preparation; Makeup labatorials 1, 2, & 3

(f1) No lecture on 11/10-11/13 (Reading Days) incl. 11/11 (Remembrance Day)

(g1) 2nd mid-term exam on 11/16 at 17:00-20:00

(g2) 11/14-11/16: Mid-term Preparation; Makeup labatorials 4, 5, & 6

(h1) Diagnostic Test #2 to be completed between 11/29 and 12/7

(h2) 12/3-12/7: Final Preparation; Makeup labatorials 7, 8, 9

Sections/subsections in textbook (Knight, 3rd Ed.):

1.1 Motion diagrams		
1.2 The particle model	5.1 Force	9.1 Momentum and Impulse
1.3 Position and Time	5.2 A short catalog of forces	9.2 Solving impulse and momentum problems
1.4 Velocity	5.3 Identifying forces	9.3 Conservation of momentum
1.5 Linear Acceleration	5.4 What do forces do? A virtual experiment	9.4 Inelastic collisions No Assignment
1.6 Motion in One Dimension	5.5 Newton's Second Law	9.5 Explosions
1.7 Solving Problems in Physics	5.6 Newton's First Law	9.6 Momentum in Two Dimensions
1.8 Units and signi cant gures	5.7 Free-Body Diagrams	10.1 The basic energy model
2.1 Uniform motion	6.1 Equilibrium	10.2 Kinetic energy and gravitational potential energy
2.2 Instantaneous velocity	6.2 Using Newton's Second Law	10.3 A closer look at gravitational potential energy
2.3 Finding position from velocity	6.3 Mass, weight, and Gravity	10.4 Restoring forces and Hooke's Law
2.4 Motion with constant acceleration	6.4 Friction	10.5 Elastic potential energy
2.5 Free fall	6.5 Drag	10.6 Elastic collisions
2.6 Motion on an inclined plane	6.6 More examples of Newton's Second Law	10.7 Energy diagrams
2.7 Instantaneous acceleration	7.1 Interacting Objects	11.1 The basic energy model revisited
3.1 Vectors	7.2 Analyzing Interacting Objects	11.2 Work and kinetic energy
3.2 Properties of vectors	7.3 Newton's Third Law	11.3 Calculating and using work
3.3 Coordinate systems and vector components	7.4 Ropes and pulleys	11.4 The work done by a variable force
3.4 Vector algebra	7.5 Examples of interacting-object problems	11.5 Work and potential energy
4.1 Acceleration	8.1 Dynamics in two dimensions	11.7 Thermal energy
4.2 Kinematics in two dimensions	8.2 Uniform circular motion	11.8 Conservation of energy
4.3 Projectile Motion	8.3 Circular orbits	11.9 Power
4.5 Uniform circular motion	8.5 Non-uniform circular motion	12.5 Torque
4.5 Uniform circular motion (continued)	(8.4 Fictitious force will not be covered)	12.8 Static equilibrium
4.6 Velocity and acceleration in uniform circular motion		
4.7 Non-uniform circular motion		