DEPARTMENT OF PHYSICS AND ASTRONOMY
COURSE OUTLINE

1. Course: Physics 221, Mechanics

Lecture Sections:

L01: MWF 12:00-12:50 CHC119 Dr. Sean Stotyn | SA101C | sean.stotyn@ucalgary.ca | Phone: 403-210-7594
L02: MWF 16:00-16:50 CHC119 Dr. Sean Stotyn | SA101C | sean.stotyn@ucalgary.ca | Phone: 403-210-7594

Course Coordinator: Dr. Marzena Kastyak-Ibrahim: SB 507, 403-220-8073, phasulc@ucalgary.ca
D2L Course PHYS 211 L01-L03/ PHYS 221 L01-L02 - (Fall 2015) - Mechanics
Departmental Office: SB 605, 403-220-5385, phasugrd@ucalgary.ca

Office hours (Drop-in Hours): Wed 9:00 – 17:00, Room ST 025

2. Prerequisites: A grade of 70% or higher in Physics 30; 50% or higher in Mathematics 31; and 70% or higher in Pure Mathematics 30 or a grade of B– or above in Mathematics II (offered by Continuing Education)

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%	
Laboratory experiments (9)	18%	
Class Response Activity	2%	
Pre-reading quizzes	3%	
Midterm test	25%	(October 23, 17:30-19:30)
Final Examination	30%	(To be scheduled by the Registrar)

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

Percentage to letter grade conversion scale:

> = 95 %	A +	> = 75 %	B +	> = 60 %	C +	> = 48 %	D +
> = 85 %	A	> = 70 %	B	> = 55 %	C	> = 45 %	D
> = 80 %	A -	> = 65 %	B -	> = 50 %	C -	< 45 %	F

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

Missed Labatorials:
Students are NOT allowed to attend a different labatorial 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** labatorials. Priority for scheduling the make-up labatorials will be given to students who missed a labatorial for a legitimate reason. A note

from a physician/counselor should be provided. Others will be allowed to do make-up labatorials as space permits. Please contact Dr. Kastyak-Ibrahim, the Undergraduate Learning Coordinator at **phasulc@ucalgary.ca** in order to arrange for a make-up labatorial 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 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.

5. Scheduled out-of-class activities:

Friday October 23, 2015, 17:30-19:30: Mid-term Test

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.

6. Course Materials: *R.D. Knight, Physics for Scientists and Engineers: A Strategic Approach, 3rd Edition, Addison-Wesley.*

7. Examination Policy: Closed book exam and mid-term test with formula sheet provided; calculator allowed; Students should also read the Calendar, Section G, on Examinations.

8. Approved Mandatory and Optional Course Supplemental Fees: None

9. Other Important Information for Students:

(a) Academic Misconduct: 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) Student Accommodations: 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. 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 Associate Head of the Department of Physics and Astronomy, Dr. Michael Wieser, by email (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@ucagary.ca.
SU Faculty Rep: Phone: 220-3913
Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; http://ucalgary.ca/provost/students/ombuds

(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) **U.S.R.I.:** 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). Your responses make a difference - please participate in USRI Surveys.

Fall, 2015 PHYS 221 Week-by-week Course Schedule

Week 1 Sep 8-11 1.1 Motion diagrams 1.2 The particle model 1.3 Position and Time 1.4 Velocity	**No labatorials in Week 1.** Do Assignment 1 on-line by 11:59 pm Sun, Sep 13. It is an Introduction to MasteringPhysics.
Week 2 Sep 14-18 1.5 Linear Acceleration 1.6 Motion in One Dimension 1.7 Solving Problems in Physics 1.8 Units and significant figures 2.1 Uniform motion 2.2 Instantaneous velocity	**Labatorial 1: Units, Equipment, Motion Diagrams** Do Assignment 2 on-line by 11:59 pm Wed, Sep 16. It is a Math Review. Classroom response activity counts for marks starting Wed, Sep 16.
Week 3 Sep 21-25 2.3 Finding position from velocity 2.4 Motion with constant acceleration 2.5 Free fall 2.6 Motion on an inclined plane 2.7 Instantaneous acceleration 3.1 Vectors 3.2 Properties of vectors 3.3 Coordinate systems and vector components	**Labatorial 2: Measuring Motion** Assignment 3: 11:59 pm Wed, Sep 23.
Week 4 Sep 28-Oct 2 3.4 Vector algebra 4.1 Acceleration 4.2 Kinematics in two dimensions 4.3 Projectile Motion *We do not cover* 4:4 *Relative motion* 4.5 Uniform circular motion	**Labatorial 3: Inclined Plane** Assignment 4: 11:59 pm Wed, Sep 30.

Week 5 Oct 5-9	**Labatorial 4: Two Dimensional Motion**
4.5 Uniform circular motion (cont'd) 4.6 Velocity & acceleration in uniform circular motion 4.7 Non-uniform circular motion	Assignment 5: 11:59 pm Wed, Oct 7.
Monday, Oct 12, is Thanksgiving Day: No Lecture.	
Week 6 Oct 13-16	**NO labatorials**
5.1 Force 5.2 A short catalog of forces 5.3 Identifying forces 5.4 What do forces do? A virtual experiment 5.5 Newton's Second Law 5.6 Newton's First Law 5.7 Free-Body Diagrams 6.1 Equilibrium 6.2 Using Newton's Second Law	Assignment 6: 11:59 pm Wed, Oct 14.
Week 7 Oct 19-23	**Labs: Open Tutorial for Midterm Preparation**
6.3 Mass, weight, and Gravity 6.4 Friction; 6.5 Drag 6.6 More examples of Newton's 2nd Law 7.1 Interacting Objects 7.2 Analyzing Interacting Objects	Assignment 7: 11:59 pm Wed, Oct 21.
****IMPORTANT: Term Test 1 on evening of Friday, Oct 23**	
Week 8 Oct 26-30	**Labatorial 5: Statics**
7.3 Newton's Third Law 7.4 Ropes and pulleys 7.5 Examples of interacting-object problems 8.1 Dynamics in two dimensions 8.2 Uniform circular motion 8.3 Circular orbits	Assignment 8: 11:59 pm Wed, Oct 28.
Week 9 Nov 2-6	**Labatorial 6: Newton's 2nd Law**
8.4 "Why does Water Stay in the Bucket" subsection only 8.5 Nonuniform circular motion 9.1 Momentum and Impulse 9.2 Solving impulse and momentum problems 9.3 Conservation of momentum	Assignment 9: 11:59 pm Wed, Nov 4.
Week 10 Nov 9-10	**NO labatorials**
9.4 Inelastic collisions 9.5 Explosions	No Assignment
Nov 11-15 are Reading Days. No lectures Nov 11-13.	
Week 11 Nov16-20	**Labatorial 7: Newton's 3rd law**
9.6 Momentum in Two Dimensions 10.1-2 Kinetic & gravitational potential energy 10.3 A closer look at gravitational PE 10.4 Restoring forces and Hooke's Law	Assignment 10: 11:59 pm Wed, Nov 18.

Week 12	**Nov 23-27**	**Labatorial 8: Collisions**
10.5 Elastic potential energy		
10.6 Elastic collisions		Assignment 11: 11:59 pm Wed, Nov 25.
10.7 Energy diagrams		
11.1 The basic energy model		
11.2 Work and kinetic energy		
11.3 Calculating and using work		
11.4 The work done by a variable force		
11.5 Force, work, and potential energy		We do not cover 11:6 Finding force from PE
Week 13	**Nov 30-Dec 4**	**Labatorial 9: Conservation of Energy**
11.7 Thermal energy		Assignment 12: 11:59 pm Wed, Dec 2.
11.8 Conservation of energy		
11.9 Power; 12.5 Torque		
Week 14	**Dec 7-8**	**Make up labatorials**
12.8 Static equilibrium		
Lectures end Tuesday, December 8.		

Department Approval_____Date_____