

UNIVERSITY OF CALGARY  
DEPARTMENT OF PHYSICS AND ASTRONOMY  
COURSE OUTLINE

1. **Course:** Physics 221, Mechanics

Lecture Sections:

L01	MWF	12:00-12:50	CHC105	Dr. David Feder dfeder@ucalgary.ca	SB 535	220-3638	Office Hours: We 10:00-11:30
L02	MWF	16:00-16:50	CHC105	Dr. Ann-Lise Norman alnorman@ucalgary.ca	SB 133	220-5405	Office Hours: We 12:30-14:00

Course Coordinator: Dr. Andrew Yau: SB 623 220-8825 yau@ucalgary.ca  
 Course Website: <http://webapps3.ucalgary.ca/~dppvan/phys211-221/>  
 Blackboard Course: PHYS 211/221 ALL - (Fall2013) - Mechanics.  
 Physics and Astronomy Office: SB 605, 220-5385, lesholme@ucalgary.ca

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 (6)	12%
Laboratory experiments (9)	18%
Diagnostic tests (2)	2%
Classroom response activity	2%
Midterm tests	36% (October 18 and November 15, 5-8 pm)
Final Examination	30% (To be scheduled by the Registrar)

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+".

The overall course mark is 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%

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

5. **Scheduled out-of-class activities:** Mid-Term Test 1: Friday, October 18, 17:00–20:00  
 Mid-Term Test 2: Friday, November 15, 17:00–20:00

**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 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 should also read the Calendar, Section G, on Examinations.
8. **Human studies statement:** 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 Section E.5 of the University Calendar.

**11. 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 with documentable disabilities are referred to the following links: Calendar entry on students with disabilities and Student Accessibility Services.
- (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
- (i) **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.

## SYLLABUS

Motion diagrams, the particle model, position and time, velocity, linear acceleration, motion in one dimension, solving problems in physics, units and significant figures;

Uniform motion, instantaneous velocity, finding position from velocity, motion with constant acceleration, free fall, motion on an inclined plane, instantaneous acceleration;

Vectors, properties of vectors, coordinate systems and vector components, vector algebra;

Acceleration, kinematics in two dimensions, projectile motion, uniform circular motion, velocity and acceleration in uniform circular motion, non-uniform circular motion;

Force, Newton's First and Second Laws, free-body diagrams;

Equilibrium, mass, weight, and gravity, friction, drag;

Interacting objects, Newton's Third Law, ropes and pulleys;

Dynamics in two dimensions, uniform circular motion, circular orbits, non-uniform circular motion;

Momentum and impulse, conservation of momentum, inelastic collisions, explosions, momentum in two dimensions;

Kinetic energy and gravitational potential energy, restoring forces and Hooke's Law, elastic potential energy, elastic collisions, energy diagrams

Work and kinetic energy, work done by a variable force, work and potential energy, thermal energy, conservation of energy, power;

Torque, static equilibrium