



AMBROSE

Course Syllabus

PHY 111 MECHANICS Fall 2010

Instructor: Dr. Leonid Braverman

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Office: G 2202

Office Hours: Wed 12:30 - 13:30 pm, or by appointment

Class Time:

Lectures: Wed, Fri 9:45 - 11:00 am, Location: A 2145

Tutorial: Wed 11:15 am - 12:30 pm, Location: A 2151

Credits: 3

Pre-Requisites: Pure Mathematics 30, Physics 30 is recommended

Texts: Walker, J: Fundamentals of Physics, Part 1, 9th (preferable) or 8th Editions. John Wiley and Sons, Inc.

Course Description

This course teaches concepts in motion and kinematics, forces and acceleration, and energy, momentum, and torque and equilibrium.

This course has an existing transfer credit agreement through Alberta Council on Admissions and Transfer. Visit <http://www.transferalberta.ca> for details.

The course material is grouped into three modules:

Module 1: Motion and Kinematics: Motion in one dimension, including displacement, velocity and acceleration; relative motion; graphical analysis of motion.

Module 2: Forces and Acceleration: Newton's laws of motion; vectors; statics with forces; vector kinematics; uniform circular motion and other curvilinear motion; non-inertial reference frames.

Module 3: Energy and momentum: Torque; Work and energy; gravitational energy; conservation of mechanical energy; friction; systems of particles and momentum conservation.

Course objectives

At the end of the course the student should:

1. understand and explain the basic concepts and laws of Kinematics and Newtonian Mechanics;
2. be able to apply the laws of motion to particular problems.

Evaluation

Assignments	5%
Mid-term Exam	35%
Quizzes	20%
Final Exam	40%
Total	100%

Grade Scale

<u>Letter Grade</u>	<u>Description</u>
A+	Excellent
A	
A-	
B+	Good
B	
B-	
C+	Satisfactory
C	
C-	
D+	Minimal Pass
D	
F	Failure

Attendance

Students are expected to attend all classes and laboratories for which they are registered. Unexcused absence may result in loss of marks or in additional assignments being required. Unexcused absences may lead to a penalty on the final grade. Where the student has been absent without permission or legitimate cause for more than one-quarter of the classes, an instructor may bar a student from writing the final examination in any course.

Course Requirements

While students are encouraged to assist each other, each student must create her or his own original solution to assignments, quizzes and exams. Duplicate submissions will result in students involved receiving a zero for the submission. Further penalties may be mandated.

Examinations

The midterm test (75 minutes) will be held on Friday, October 15, 2010 during a class time.

The cumulative final 3 hours examination will be held on Friday, December 17, 2010, 9:00 – 12:00 at A2145.

Assistance

Your instructor will be available in class, during office hours, and other times by appointment.

Additional Important Notes

The last day to enter a course without permission and/or voluntary withdrawal from a course without financial penalty – Friday, September 17, 2010.

The last day to voluntarily withdraw from a course or change to audit without academic penalty – Friday, November 12, 2010.

Course changes, including adding or dropping a course, may be made during the Registration Revision period, as outlined in the Calendar of Events. All course changes must be recorded on a Registration form, available from the Office of the Registrar. Due to circumstances such as class size, prerequisites or academic policy, the submission of a Registration form does not guarantee that a course will be added or removed from a student's registration. Students may change the designation of any class from credit to audit up to the date specified in the Calendar of Events, although students are not entitled to a tuition adjustment or refund after the Registration Revision period.

Withdrawal from courses after the Registration Revision period will not be eligible for tuition refund. Students intending to withdraw from some or all of their courses must submit a completed Registration form to the Registrar's office. The dates by which students may voluntarily withdraw from a course without penalty are listed in the Calendar of Events. A grade of 'W' will be recorded on the student's transcript for any withdrawals from courses made after the end of the Registration Revision period and before the Withdrawal Deadline (also listed in the Calendar of Events). 'W' grades are not included in grade point average calculations. A limit on the number of courses from which Academic a student is permitted to withdraw may be imposed. Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students may request revised final exams if they have three exams in one 24-hour period or two exams at the same time. Final exam schedule revision request forms are available at the Registrar's Office and must be handed in by Monday, November 29, 2010 (Fall semester). If you do not have your request in by this date, all exams within a 24-hour period will have to be written as scheduled. If you have two exams at the same time, you will be given four hours to write both exams.

Graded final examinations will be available for supervised review at the Academic Office (L2044) and will be destroyed after six months.

Final grades for the course appear as letter grades. The table below shows the percentage equivalents for each letter grade. An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Office of the Registrar in writing within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal to review final grades. If the appeal is sustained, the fee will be refunded.

Please note that final grades will be available on your student portal. Printed grade sheets are no longer mailed out.

Weekly Schedule and Other Information

This course is taught with the lecture-tutorial mode. Plan to attend all sessions. Assignments must be submitted not later than 10 days after they were handed out.

Tentative Lecture Plan

WEEK	TOPICS	READINGS
Module 1		
1 Sept 8-10	Introduction to course, the International System of Units. Kinematics in a straight line: Position, Velocity. Uniform motion. Average and Instantaneous velocity	1.1 - 1.7 2.1 - 2.5
2 Sept 15-17	Acceleration. Free fall. Applications.	2.6-2.7, 2.9-2.10
3 Sept 22-24	Vectors. Definition, magnitude and direction. Operations. Quiz 1, Sept 22	Chapter 3, notes
4 Sept 29- Oct 1	Kinematics in 2D. Projectile motion.	Chapter 4, notes
Module 2		
5 Oct 6-8	Newton's laws. Forces in Nature. Inertial frames of reference. Presentation of Newton's laws. Free-body diagram. Friction force. Quiz 2, Oct 6.	5.1 - 5.9
6 Oct 13-15	Friction. Midterm Oct 15.	6.2-6.3, notes
7 Oct 20-29	The Drag Force and Terminal Speed Circular motion. Uniform Circular Motion. Examples. Applications of Newton's laws. Quiz 3, Oct 20.	6.4-6.5, notes
8 Nov 3-5	Work and energy. Kinetic Energy. Power. Quiz 4, Nov 3.	7.1-7.7, notes
Module 3		
9 Nov 10-12	Potential Energy. Conservation of energy. Systems of interacting objects. Internal and external forces.	8.1-8.8, notes
10 Nov 17-19	Momentum, collision: systems of particles. Centre of mass. Momentum definition and conservation. Examples. Quiz 5, Nov 17.	9.1-9.8, notes
11 Nov 24-26	Collisions in 1-d. Elastic and inelastic collision	9.9-9-10, notes
12 Dec 1-3	Inverse square laws: gravitational and electrical forces. Orbital motion. Escape velocities. Quiz 6, Dec 1.	13.1-13.8, notes
13 Dec 8	Equilibrium. The requirements of equilibrium. Torque. Rotational equilibrium.	Notes

