

Grade 12 Physics

GRANDE PRAIRIE REGIONAL COLLEGE
PHYSICS 0130
COURSE OUTLINE
WINTER 1995

- INSTRUCTOR Sukhvir Sandhu
- OFFICE: C204
- OFFICE HOURS: 11:00 a.m. - 12:00 p.m. M, W, F.
2:30 p.m. - 3:00 p.m. Tuesday and Thursday
other times by appointment
- PHONE: 539 - 2831
- PREREQUISITE: MA 0120 or MA 0130 placement, PC 0120
Recommended: at least 5 or 6 in Ma 20/0120 and PC 20/0120
- TEXT BOOK: COLLEGE PHYSICS by Jerry D. Wilson.
- SUPPLIES: Plastic folder to hold looseleaf, plain paper, graph paper, stapler, pencil, pen, and calculator with trigonometric functions and exponential functions, math set.
- COURSE GOALS: This course is designed to provide the students with an understanding of basic concepts and principles of physics (Law of vectors, force, motion, equilibrium, work, power, and energy; electrostatics and current electricity; electromagnetism). The student will develop problem solving skills and gain an appreciation of the physics of modern society.
- ATTENDANCE: Regular attendance is expected from all students and is essential for passing the course. Students who miss classes will find themselves falling behind and failing. Note that students missing 10% or more of the classes may not be permitted to write the final exam. Classes will start on time, so please arrive a few minute early.
- ASSIGNMENTS:
1. There are seven or eight assignment throughout the term. Each assignment contains two eassy-type questions and eight to ten tough problems. When the assignment is due will be announced during the class.
 2. Assignment should be handed on at the **BEGINNING** of class on the date on which they are due. Late assignments will be penalized at the rate of 10% a day(including weekend, and holidays).

This penalty becomes effective beginning with any assignment received after the commencement of class on the due date. Late assignment should be handed to the instructor in her office. Do NOT risk leaving assignments on or underneath her office door.

3. Assignment will not be accepted beyond two working days past.

TESTS AND EXAMS:

1. There are short quizzes, approximately four test, a midterm exam, and a final exam throughout the term. The tests will be given after finishing each three units. There will be short quiz of 10 minutes after each unit.
2. Absence from test, quizzes or exams will result in a 0 mark; unless previous arrangement is made with the instructor or absence is for medical or other legitimate reasons. College team members must notify the instructor prior to the test date if they are to be away.

LABS:

There will be nine or ten labs during the course, starting in the second week of the semester. This important component of the course is designed to introduce basic laboratory skills and reinforce concepts introduced in lectures!

The following lab policies are enforced by all the members of the science courses in the Academic Development Program.

- a) Students must pass the lab component by 50 % as a requirement for receiving credit in the course.
- b) Failure of a student to submit three or more lab reports or lab assignments constitutes ground for being debarred from the final exam for the course.
- c) Students are solely responsible for attending labs. However, given a justifiable excuse with a documentation, a student may be granted exemption from one missed lab, after which missed labs will receive a grade of zero for those labs. Lab make-up opportunities shall not be granted.

Formal lab reports are due one week after the lab is done. Handouts for labs will be distributed in the class ahead of time. No lab reports will be accepted after the deadline.

EVALUATION:

Assignments	21%	
Tests	16%	
Lab Reports	20%	
Mid-Term Exam	10%	
Final Exam	30%	
Class Participation	3%	(see * for details)
Total	100%	

* Class contributions and submissions

The 3% assigned here includes contributions to class participation, improvement, attendance, completion of class assignments in time. All these are considered in arriving at your class participation mark, which will be calculated at the end of April, 1995.

<u>GRADING:</u>	<u>9-Point Grade</u>	<u>Percentage Equivalence</u>	<u>Designation</u>
	9	90 - 100	Excellent
	8	80 - 89	
	7	72 - 79	
	6	65 - 71	Good
	5	57 - 64	
	4	50 - 56	Pass
	3	45 - 49	Fail
	2	26 - 44	
	1	0 - 25	

Any student wishing to withdraw from the course must do so officially before March 3 in order to avoid receiving a failing grade.

LEARNING OBJECTIVES:

- Unit 1: Units and Problem Solving (Chapter 1)
a) SI units for Length, Mass, and Time
b) Dimensional Analysis
c) Unit Conversion
d) Significant Figures
e) Problem Solving
- Unit 2: Kinematics: The Description of Motion
a) A Change of Position
b) Speed and Velocity\
c) Acceleration
d) Kinematic Equations
e) Free Fall
- Unit 3: Motion in Two Dimensions
a) Components of Motion
b) Vector Additions
c) Relative Velocity
d) Projectile Motion
- Unit 4: Force and Motion
a) The Concept of Force and Net Force
b) Newton's Laws of Motion and Their Applications
c) Friction
- Unit 5: Work and Energy
a) Work Done by a Constant Force
b) Work Done by a Variable Force
c) The Work-Energy Theorem: Kinetic Energy
d) Potential Energy
e) The Conservation of Energy
f) Power
- Unit 6: Momentum and Collisions
a) Linear Momentum
b) The Conservation of Linear Momentum
c) Impulse
d) Elastic and Inelastic Collision
- Unit 7: Circular Motion and Gravitation
a) Uniform Circular Motion and Centripetal Acceleration
b) Newton's Law of Gravitation
c) Kepler's Law and Earth's Satellites
- Unit 8: Rotational Motion and Equilibrium
a) Torque, Equilibrium, and Stability.

- Unit 9: Electric Charge, Force, and Energy
- a) Electric Charge
 - b) Electric Charging
 - c) Electric Force
 - d) Electric Field
 - e) Electrical Energy and Electric Potential
 - f) Capacitance and Dielectrics
- Unit 10: Electric Current and Resistance
- a) Batteries and Direct Current
 - b) Current and Drift Velocity
 - c) Ohm's Law and Resistance
 - d) Electric Power
- Unit 11: Basic Electric Circuits
- a) Resistance in Series, Parallel, and Series-Parallel
 - b) Multiple Circuits and Kirchhoff's Rules
- Unit 12: Magnetism and Electromagnetic Induction
- a) Magnetic Forces on a Current-Carrying Conductor
 - b) Induced Emf's: Faraday's Law and Lenz's Law
 - c) Application of Electromagnetism