

GRANDE PRAIRIE REGIONAL COLLEGE  
DEPARTMENT OF ACADEMIC DEVELOPMENT  
COURSE OUTLINE

PHYSICS 130

INSTRUCTOR: Sukhvir Sandhu

OFFICE: Portable C

OFFICE HOURS: 10 - 12 a.m., 4 - 5 p.m. M, W, F or by  
appointment  
10 - 12 a.m., 2 - 3 p.m. T,R or by appointment

PHONE: 539-2827 (office), 539-5837 (home)

EQUIVALENCY: Physics 30 (Grade 12 physics)

PREREQUISITE: MA 120 or MA 130 placements, PC 120  
Recommended: at least a 5 or 6 in MA 20/120  
and PC 20/120

TIME AND LOCATION: Class: M, W, F - 1:00 p.m. - 1:50 p.m.  
(R.N. E247)  
T, R - 1:30 p.m. - 2:20 p.m. (FO E)  
Lab: W - 8:00 a.m. - 9:50 a.m.  
(Physics Lab)

TEXTBOOK: Physics: PHYSICS  
Its methods and meaning, 5th Edition  
by Taffel.

EQUIPMENT: Calculator with trig function and exponential  
function, math set

COURSE DESCRIPTION: This course is designed to provide the students  
an understanding of basic concepts and  
principles of physics (laws of vectors, force,  
motion, equilibrium, work, power, and energy;  
electrostatics and current electricity;  
electromagnetism if the time permits). The  
student will develop problem-solving skills  
and gains an appreciation of the physics in  
modern society.

ATTENDANCE AND LATENESS Regular attendance is expected from all  
students and is crucial for passing the course.  
Students who miss more than 20% of classes may  
not be permitted to write the final exam.

Lateness will not be tolerated. Classes start  
at the stated times, so please arrive a few

minutes early.

LABS AND EXAMS:

There will be tests and midterms which are mentioned in the outline, covering the previous material. There will also be several "quickie quizzes" at intervals between the tests. Absence from quizzes or exams will result in mark of 0 for that quiz or exam unless previous arrangements are made with the instructor or when absence is for medical or other legitimate reasons.

ASSIGNMENTS  
AND LAB REPORTS:

Assignments and lab reports are due on dates announced in class. Late penalties will be awarded as follows:

5% per day late

(No labs or assignments will be accepted later than days after the due date)

CLASS FORMAT:

Classes will typically have a lecture/demonstration/discussion format, with class time provided for problem-solving

LABS:

There will be several 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 problem-solving and reinforce concepts introduced in lectures!

Attendance is compulsory for labs and missing labs will reduce your grade considerably.

Handouts for labs will be distributed in the class ahead of time.

Physics 130 Lab Wednesday, 8:00 - 9:50 a.m.  
(Physics Lab)

EVALUATION:

The final grade will be based on performance in assignments, exams, and laboratory as follows:

Final Exam	30%
Midterm Exam	15%
Test/Quizzes/Assignments	35%
Laboratory	<u>20%</u>
	100%

Percentage/Grade Point Equivalency

<u>%</u>	<u>Grade Point</u>
90 - 100	9
80 - 89	8
72 - 79	7
65 - 71	6
57 - 64	5
50 - 56	4
45 - 49	3
26 - 44	2
0 - 25	1

Ordinarily, any student unable to finish the course by the end of semester will be given a "failure" as a final grade. Any student wishing to withdraw from the course must do so officially before Nov. 2, 1990 in order to avoid receiving a failing grade.

COURSE CONTENT: The following topics will be covered in the course. The number in parentheses after the topics are the chapters of the text book that cover the given topics.

1. Measuring Length and Time (2)

Unit; Metric System; International System; Review of some math skills

2. Measuring Mass and Weight (3)

Mass; weight; force; units of mass, weight, force; mass versus weight; measuring weight or force; measuring mass; density; measuring of density of a substance.

Problem solving and conceptual review.

3. Vectors, Force and Motion (4)

Vectors; displacement, velocity, force are vectors; resultant to two or more vectors graphically and analytically; effect of the angle between two vectors on the resultant; resolving a vector into components; effect of the angle.

4. Vectors, Force and Motion (4)

Balanced and unbalanced forces; equilibrium; The equilibrant; string tension; friction. (With necessary handouts).

Problem Solving and Conceptual Review

---- T E S T ----

5. Motion in a straight line (5)

Frames of reference; speed and velocity; uniform and accelerated motion; straight line motion; uniformly accelerated motion; derivation of formulas for motion in a straight line; motion of freely falling bodies in air.

6. Two - dimensional Motion (6)

Independence of motions; projectile fired horizontally; projectile fired at an angle.

7. Two - dimensional Motion (6)

Circular motion at a constant speed; centripetal acceleration, centripetal force; Kepler's Law, circular motion and S.H.M.; simple Harmonic motion of a pendulum.

8. Laws of Motion (7)

Newton's Laws of Motion; Acceleration and freely falling bodies; Momentum; Law of Conservation of Momentum; Impulse

---- T E S T ----

9. Laws of Gravitation and Planetary Motion (8)

Law of Gravitation; Law of Gravitation and Weight; Law of Gravitation and Acceleration due to gravity; gravitational fields; Field strength of the earth; escape velocity; effect of air resistance

10. Law of Work (9)

Force and work; Law of Work; Inclined plane; force-distribution; relationship in ideal machines; mechanical advantage; efficiency; power

---- MID-TERM EXAM ----

11. Energy and Its Conservation (10)

Kinetic energy; potential energy; ;conservation of potential and kinetic energy; elastic and inelastic collision

12. Electricity and Nature of Electricity (20)

Electric charge; conductors and insulators; atomic structure; electroscope; charging by induction; difference of potential; steady direct current; voltaic cell

13. Natural Unit of Electricity (21)

Unit of electric charge; natural unit of electric charge; elementary unit charge

14. Coulomb's Laws and Electric Fields (22)

Coulomb's Law; electric field of force; electric field intensity; field of force between two charge bodies; work and potential energy

15. Electric Circuits (23)

Electromotive force; EMF and terminal voltage; electrical power; electrical work and energy; resistance; Ohm's Law

---- T E S T ----

16. Series and Parallel Circuits

Resistors in series; resistors in parallel; resistors in series and parallel combination; The Kirchoff's Law

17. Magnetism and Magnetic Field (25)

Magnetic poles and compass; magnetization by induction; magnetic field and lines of force; magnetic field around a current; and direction of magnetic field; Domain Theory of Magnetism

18. Forces Exerted by Magnetic Fields (26)

Force on a current in a magnetic field ; direction and magnitude of force; forces between two parallel currents

---- F I N A L E X A M ----