



Grande Prairie Regional College

Department: Academic Upgrading

COURSE OUTLINE – Winter 2009 PC0110 3(3-0-.5) HS Physics Grade 10 Equivalent

Instructor	Dr. Devinder Singh Sekhon	Phone	539-2991
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Office Hours	R and F 2:30 – 3:20, and R or by appointment		

PREREQUISITE:

SC 0100; and MA0110

TEXT BOOK:

Locally developed modules by Dr Sekhon are available at the Book Store. You may also use any other suitable text book to help you.

CREDIT/CONTACT HOURS:

PC 0110 is a 3.5 hr/week course with a small lab component.

COURSE DESCRIPTION:

The major concepts to be covered include kinematics; Newton's laws of motion; force; work, energy and power; and heat.

ATTENDANCE AND LATENESS:

Regular attendance is expected of all students and crucial to passing the course. Students missing classes will soon find themselves falling behind and thus failing. Students with more than 15% absences (7 class days) may be barred from writing the final exam. Lateness is **highly discouraged**.

ASSIGNMENTS, TESTS AND EXAMS:

All tests and exams **MUST** be written on scheduled times. A missed test or exam will result in a score of zero unless **PRIOR** arrangements have been made with the Instructor for valid reasons to write the test/exam at some other time. All assignments **MUST** be handed by the deadline.

LABS:

There will only be a few labs in the course, and attendance in them is compulsory. A missed lab will result in a mark of zero. Makeup labs **CANNOT** be guaranteed, and may be permitted only under special circumstances. All labs reports **MUST** be handed in before the deadline. Late reports will result in severe penalties. Labs reports will **NOT** be marked if handed in late by more than two days unless pre-approval of the Instructor has been secured.

EVALUATION:

The course has been divided into four main units - Kinematics; Force; Work, energy, and power; and Heat (Thermal Energy). There will be an assignment on each Unit, a Midterm exam, and the Final exam. The final grade will be based on different components as follows:

4 ASSIGNMENTS	=	36%
MIDTERM EXAM	=	26%
FINAL EXAM	=	32%
LAB	=	6%

Grades will be assigned on the Letter Grading System.

Academic Upgrading Department**Grading Conversion Chart**

Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A ⁺	4	90 – 100	EXCELLENT
A	4	85 – 89	
A ⁻	3.7	80 – 84	FIRST CLASS STANDING
B ⁺	3.3	76 – 79	
B	3	73 – 75	GOOD
B ⁻	2.7	70 – 72	
C ⁺	2.3	67 – 69	SATISFACTORY
C	2	64 – 66	
C ⁻	1.7	60 – 63	
D ⁺	1.3	55 – 59	MINIMAL PASS
D	1	50 – 54	
F	0	0 – 49	FAIL

UNIT 3: WORK, ENERGY AND POWER

On completing this Unit, you should be able to

- a. Define and explain work done by a force, and state units of work
- b. Identify situations in which no work is done by a force. Calculate work done under different situations
- c. Define and explain the concept of energy, and state its units.
- d. Name different forms of energy, and explain the principle of conservation of energy. Also explain the principle of conservation of work and energy.
- e. Explain kinetic and potential energies, and using the principle of conservation of energy, convert one form into the other. Solve related problems.
- f. Define and explain power, and state its units. Solve related problems.
- g. Solve problems related to the above three machines.

Do all the problems at the end of the unit.

ASSIGNMENT 3

UNIT 4: HEAT OR THERMAL ENERGY

On completing this unit, you should be able to

- a. Describe heat as thermal energy and state its units.
- b. Describe and explain giving examples the three modes of heat transfer
- c. Describe temperature, and distinguish between heat and temperature.
- d. Explain the Celsius and the Kelvin (Absolute) scales of temperature, and convert one into the other.
- e. Define and explain (specific) heat capacity, and state its units.
- f. Discuss the implication of the large heat capacity of water and how it modifies the climate of coastal areas.
- g. State the relation between the mass of a substance, its heat capacity, change in temperature, and the amount of heat. Solve related problems.
- h. Define change of state (phase); and explain latent heat of fusion and latent heat of vaporization. State their units.
- i. Use the above definitions to calculate the amount of heat absorbed or given off when a substance undergoes a change in phase.
- j. State and explain the principle of thermal equilibrium and that of heat exchange (calorimetry), and use the principle to solve related problems.
- k. Explain thermal expansion of substances and the coefficients of linear thermal expansion, α , and volume expansion, β . State the relation between the two.
- l. Solve related problems

Do all the following problems at the end of the unit.

CONGRATULATIONS. YOU HAVE COMPLETED (Not passed yet) THE COURSE

ASSIGNMENT 4

FINAL EXAM