Grande Prairie Regional College
Academic Upgrading Department

COURSE OUTLINE – Fall 2009 & Winter 2010
PC 0120 5 (4 - 0 – 2) HS Physics Grade 11 Equivalent

Instructor:	Nancy Fraser	**Phone:**	539 – 2980
Office:	J – 216	**E-mail:**	nfraser@gprc.ab.ca
Office Hours:	As posted on my office door		

Prerequisite(s)/corequisite(s): MA 0110, & SC 0110 or PC 0110/ MA 0120

A minimum grade of 60 % in Ma 0110 and PC 0110 is recommended.

Required Text/Resource Materials: College Physics by Wilson (any edition – the 7th edition is the current edition)

Supplementary texts:
1.   Elements of Physics by Smith and Copper (1979)   (Especially good for waves.)
2.   Physics: Principles and Problems, by Zitzewitz (any edition)
3.   Modern Physics by Trenklein (1990, and 1994)

–   lab notebook (coiled notebook is fine do not spend the money on a real lab notebook)
–   **Non**-programmable calculator
–   Math set (you need a good compass)
–   10 quad to 1 cm graph paper are also required.

Description: The major topics to be covered include kinematics in 1-dimension and 2-dimensions, vector forces; incline plane; circular motion; and gravitation, waves, water, sound. Problem solving is highly emphasized.

Delivery Mode(s): Lecture will be the main method of delivery. There will also be several experiments throughout the course. Blackboard will also be utilized.

Credit/Contact Hours: This is a 5 credit course and meets 6 hours per week (approximately 4 hour lecture and 2 hours lab).

Objectives:

Students should

1. understand theory, memorize formulae related to kinematics and be able to solve problems in which acceleration is constant.
2. be able to interpret and draw x-t, v-t, and a-t graphs.
3. be able to do calculations from x-t, v-t, and a-t graphs.
4. understand theory related to relative velocity and be able to solve related problems.
5. be able to add vectors using the component method.
6. understand theory, memorize formulae related to projectile motion and be able to solve related problems.
7. understand theory, memorize formulae related to Newton's three laws of forces and be able to solve related 2–dimensional problems.
8. understand theory, memorize formulae related to use work, power, and energy and solve related problems.
9. understand theory, memorize formulae related to centripetal motion and be able to solve related problems.
10. understand theory, memorize formulae related to Newton's Law of Gravitation and be able to solve related problems.
11. be able to state Boyle's Law, Charles' Law, combined gas laws, be able to solve related problems.
12. understand theory, memorize formulae related to waves: water, and sound be able to solve related problems.

13.   understand theory, memorize formulae related to reflection, refraction, diffraction and interference of each type of wave and be able to solve related problems.

14.   understand theory, memorize formulae related to Doppler Effect, beats, resonance, supersonic velocities, shock waves and be able to solve related problems.

Grading Criteria: Regular attendance is expected of all students, and is crucial to passing the course. Students who miss classes will soon find themselves falling behind and failing. Lateness will not be tolerated as it interrupts the instructor and fellow classmates. As per Department Policy, if you miss more than 15 % of classes per semester (approximately 1 day/week) in any course, you may be debarred from the final exam for that course.

If a student is going to miss a test or midterm he/she **must** contact the instructor prior to the test or midterm in order to be considered for a rewrite. There may be a deduction of 10% for test rewrites. A certificate (a doctor's or a note from the funeral home) will be required to make up the final exam. **You will receive a grade of F if you do not write the final exam.**

Laboratory attendance to each specific experiment is compulsory. There are NO 'makeup' labs in this course. Missed labs will result in a grade of 0 %.

EVALUATION: Lab reports must be submitted on the required date and at the required time.

Penalties for late **assignments** are as follows:

1 day late – 20%, 1 days late – 50%, 3 days late – 100%

Penalties for late **labs** are as follows:

5 minutes after due time - 10 %, 24 hours after due time - 100%

Your final mark will be based on:

Assignments	15%
Labs	15%
Midterm	20%
Tests	10%
Final Exam	40%
Total	100%

Statement on Plagiarism:

See calendar.

The instructor reserves the right to use electronic plagiarism detection services.

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	77 – 79	
B	3.0	73 – 76	GOOD
B$^-$	2.7	70 – 72	
C$^+$	2.3	67 – 69	SATISFACTORY
C	2.0	63 – 66	
C$^-$	1.7	60 – 62	
D$^+$	1.3	55 – 59	MINIMAL PASS
D	1.0	50 – 54	
F	0	0 – 49	FAIL

****

It is recommended that you have a grade of 60 % or better to continue to PC 0130.

****

Transferability: This course is equivalent to Alberta grade 11 physics and is transferable to other post secondary institutions.

Course Schedule/Timeline:

Days	Topic	Required Reading
2	Review metric conversion, and significant figures	Chapter 1
6	Kinematics 1-dimension (Formulae and Graphically)	Chapter 2
3	Vector addition (omit Triangular Method and vector subtraction)	Pgs 68 – 79
2	Relative velocity	Pgs 88 – 94
2	*Projectile motion (Kinematics 2 – dimensions)	Pgs 80 – 88
8	*** Newton's three laws of forces***	Pgs 103 – 132
1	Work, power	Pgs 141 – 147, 166 – 168
1	Energy	Pgs 150 – 166
2	Centripetal motion	Pgs 228 – 235
1	**Newton's Law of Gravitation, Kepler's Three Laws	Pgs 238 – 251
1	Gas Laws	Pgs 358 – 363
1	Define waves and elasticity (In this section you will NOT be responsible for all the formulae. You are responsible for the concepts.)	Pgs 455 – 470
1	Hooke's law, period of a simple pendulum, simple harmonic motion	Pgs 434, 445 – 446
3	***Transverse waves, reflection, refraction, diffraction interference, principle of superposition as they relate to water waves.	Pgs 471 – 479 450 – 460
8	Sound: Definition, speed of sound in air, reflection, refraction, diffraction Interference of sound: principle of superposition beats, resonance in open and closed air columns, 2-point interference, as they relate to sound waves.	Pgs 471– 521
1	Doppler effect	Pgs 484 – 488
1	Supersonic velocities	Pgs 510 – 512

Examinations:

* Test 1

** Test 2

*** Midterm***

*** Test 3 (If time permits)

There will be a three hour final at the end of the course. The time and date are set by the Registrar's office.