

# Grande Prairie Regional College

School of Business

COURSE OUTLINE – Fall 2006, and Winter 2007

PC 0120 5 (4 – 0 – 2) HS Physics Grade 11 Equivalent

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<b>Office Hours</b>			

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### **Prerequisite(s)/corequisite(s):**

MA 0110, & SC0110 or PC 0110/ MA 0120

### **Required Text/Resource Materials:**

**College Physics by Wilson (1990, 1994, 1997, 2000, 2003, or 2007 editions)**

Supplementary texts:

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

A lab notebook (coiled notebook is fine do not spend the money on a real lab notebook)

Nonprogrammable calculator

Math set (you need a good compass)

10 quad to 1 cm graph paper is also required.

**Description:**

The major topics to be covered include waves, water, sound, and light; spherical mirrors, and lenses; velocity, and vector forces; incline plane; circular motion; and gravitation. 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:**

1. Students should understand relative velocity and be able to solve related problems.
2. Students should understand projectile motion and be able to solve related problems.
3. Students should understand Newton's three laws of forces and be able to solve related 2 – dimensional problems.
4. Students should understand work, power, and energy and be able to solve related problems.
5. Students should understand centripetal motion and be able to solve related problems.
6. Students should understand Newton's Law of Gravitation and be able to solve related problems.
7. Students should understand waves: water, sound, and light.
8. Students should understand reflection, refraction, diffraction and interference of each type of wave and be able to solve related problems.
9. Students should understand Doppler Effect, beats, resonance, supersonic velocities, shock waves and be able to solve related problems.
10. Students should understand relative velocity and be able to solve related problems.
11. Students should be able to draw mirror and lens diagrams and be able to solve related problems.
12. Students should be able to explain Snell's law, critical angle, and total internal reflection and be able to solve related problems.

13. Students should be able to explain interference through thin films, Young's double slit experiment, and diffraction and diffraction gratings be able to solve related problems.
14. Students should understand continuous, emission, and absorption spectra.

**Transferability:**

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

**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 % per semester of classes (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 miss the final.**

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 – 0%

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

5 minutes after due time - 10 %, 24 hours after due time - 0%

Your final mark will be based on:

assignments	15%
labs	15%
*2 midterms	25%
tests	10%
1 Final Exam	<u>35%</u>

Total 100%

\*The first midterm is worth 15% and the second is worth 10%.

Grades will be assigned on the Letter Grading System.

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

**Course Schedule/Timeline:**

<b><u>Days</u></b>	<b><u>Topic</u></b>	<b><u>Required Reading</u></b>
2	Review metric conversion, and significant figures.	Chapter 1
3	Vector addition.	Pgs 75 – 80
2	Relative velocity.	Pgs 90 – 94
2	Projectile motion.	Pgs 81 – 89
8	Newton's three laws of forces.	Pgs 103 – 130
1	Work, power.	Pgs 141 – 143, 164 – 166
1	Energy.	Pgs 148 – 161
2	Centripetal motion.	Pgs 223 – 225
1	**Newton's Law of Gravitation.	Pgs 231 – 245
1	Define waves and elasticity.	Pgs 433 – 445
1	Hooke's law, period of a simple pendulum, simple harmonic motion	Pgs 434, 441, 446 – 448
3	Transverse waves, reflection, refraction, diffraction interference, principle of superposition as they relate to water waves.	Pgs 449 – 454
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 448 – 449, 454 – 459 467 – 484, 491 – 496
2	***Doppler effect, Supersonic velocities	Pgs 484 – 491
1	Light: Definition, pinhole camera and characteristics of images.	Pgs 705 – 706,
3	Law of reflection, reflection in plane and spherical mirrors.	Pgs 706 – 708, 729 – 740
5	Refraction through single and double lenses, atmospheric refraction , apparent depth, human eye and vision.	Pgs 708 – 723, 740 - 753 793 – 796

3	Diffraction and diffraction gratings Interference of light: thin films, Young's double slit experiment, polarization.	Pgs 675 – 678, 760 – 785
1	Continuous, Emission, and absorption spectroscopy.	Pgs 860 – 866

**Examinations:**

\*\*Midterm 1 will be at the end of centripetal motion.

\*\*\*The second midterm will be at the end of sound.

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

**Statement on Plagiarism:**

See calendar.

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