



**COURSE OBJECTIVES:** This course is designed to be a survey course as an introduction to university level physics. In this course, students will learn about classical physics including Newton's Laws, vectors, energy, momentum and rotational motion. Gravity and oscillatory motion will also be discussed. Sound and light waves will also be studied. The course concludes with a brief look at modern physics.

**LEARNING OUTCOMES:** Upon successful completion, a student is expected to have:

- Reasonable understanding of concepts of kinematics, vectors, Newton's Laws, energy, rotational motion, oscillatory motion, superposition of waves, sound and electromagnetic waves.
- Experience with common mathematical and experimental tools, including problem solving for this course.

### **TRANSFERABILITY:**

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page <http://www.transferalberta.ca>.

**\*\* Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability**

### **EVALUATIONS:**

Assignment	10%	
*Midterm #1	15%	October 7 <sup>th</sup>
*Midterm #2	20%	November 18 <sup>th</sup>
Laboratory	15%	(Must get at least 50% in the lab to pass the course)
Final Exam	40%	Cumulative (Time and Location TBA by Registrar's office)

*\*The higher midterm mark will have 20% weight.*

**NOTE:** There will be no makeup or deferral available for any missed Quizzes, Tests or Labs. Lab reports must be submitted a week after the experiment and at the beginning of the class. Late lab reports will not be accepted. Students who missed the lab due to sickness/unavoidable reason will get the average class mark for the missed experiment.

**Final Exam:** This exam is cumulative. The final exam for lecture will be written during the exam period, between December 10 and December 20 inclusive (including Saturdays and evenings). Writing early is not permitted. Final exam for laboratory will be given during the last meeting in the lab and covers all experiments.

**GRADING CRITERIA:** (The following criteria may be changed to suite the particular course/instructor)

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

**COURSE SCHEDULE/TENTATIVE TIMELINE:**

NOTE: The course schedule is on myClass and may be updated there if necessary. This schedule is preliminary but gives a good idea of which sections in the textbooks you should read to be caught up with the class lectures.

Date	Topic	Section in Walker
Sept 2	Introduction	1-1,1-2, 1-4
Sept 2 & 6	<i>Lab orientation</i>	
Sept 9	Dimensional Analysis	1-3, 1-6, 1-5, 1-8
Sept 12	Position, Velocity, Acceleration	1-7, 2-1, 2-2, 2-3, 2-4
Sept 9 & 13	<b>Lab 1</b> – <i>Graphical analysis</i>	
Sept 16	Kinematics Equations, Free Fall	2-5, 2-6, 2-7
Sept 19	Vectors	3-1, 3-2, 3-3, 3-4, 3-5
Sept 16 & 20	<b>Lab 2</b> – <i>Acceleration due to gravity</i>	
Sept 23	Projectile motion	4-1, 4-2, 4-3, 4-4, 4-5
Sept 26	Newton’s Laws, Weight, Friction	5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7
Sept 23 & 27	<b>Lab 3</b> - <i>Vector Addition</i>	
Oct 3	Applying Newton’s Laws	6-1, 6-2, 6-3, 6-4, 6-5
Oct 4 & 7	<b>Lab 4</b> - <i>Non-Uniform motion</i>	
Oct 7	<b>Midterm #1</b>	
Oct 17	Work, Kinetic and Potential Energy	7-1, 7-2, 7-3
Oct 18 & 21	<b>Lab 5</b> - <i>Atwood’s Pulley</i>	
Oct 21	Power, Applying Energy	7-4, 8-1, 8-2, 8-3, 8-4
Oct 24	Impulse, Momentum, Collisions	9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 9-7
Oct 25 & 28	<b>Lab 6</b> - <i>Potential Energy &amp; Kinetic Energy</i>	

Oct 28	Rotational Kinematics, Moment of Inertia	10-1, 10-2, 10-3, 10-4, 10-5, 10-6
Oct 31	Torque, Static Equilibrium	11-1, 11-2, 11-3, 11-4, 11-5
Nov 1 & 4	<b>Lab 7-Collision of ball</b>	
Nov 4	Angular Momentum, Rolling Motion	11-6, 11-7, 11-8
Nov 7	Gravity, Gravitational Potential Energy	12-1, 12-3, 12-4, 12-5
Nov 14	Simple Harmonic Motion, Damped & Driven	13-1, 13-2, 13-3, 13-7, 13-8
Nov 15 & 18	<b>Lab 8-Standing Waves on a string</b>	
Nov 18	<b>Midterm #2</b>	
Nov 21	Mass on Spring, Pendulum	13-4, 13-5, 13-6
Nov 22 & 25	<b>Lab 9- Speed of Sound</b>	
Nov 25	Waves	14-1, 14-2, 14-3
Nov 28	Sound Waves-Intensity and Standing waves	14-4, 14-5, 14-7, 14-8
Nov 29 & Dec 2	<b>Lab 10-Interference of Light</b>	
Dec 2	Light Interference	25-3, 28-1, 28-2, 28-3
Dec 5	Diffraction	28-4, 28-5, 28-6
Dec 6 & 9	<b>Lab Finals</b>	
Dec 9	Black Body radiation, Photoelectric Effect	30-1, 30-2, 30-3, 30-4
Dec 12	de Broglie, Heisenberg, Tunneling	30-5, 30-6, 30-7

**STUDENT RESPONSIBILITIES:** Assignments must be handed in on time, and tests/exams must be written on the days announced in class. If an emergency prevents a student from writing a test/exam on the scheduled day, the student must contact the instructor immediately to make other arrangements. Otherwise, the student will receive a zero grade for that component of the course.

**STATEMENT ON PLAGIARISM AND CHEATING:**

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the Northwestern Polytechnic Calendar at <https://www.nwpolytech.ca/programs/calendar/> or the Student Rights and Responsibilities policy which can be found at <https://www.nwpolytech.ca/about/administration/policies/index.html>.

\*\*Note: all Academic and Administrative policies are available on the same page.

**Additional Information (Optional):**

Instructors may add whatever they want here.