

Applied Science and Management
PHYS 050
3 Credit Course
Fall 2014

Principle of Physics

INSTRUCTOR: Tom McBee
OFFICE HOURS: TBA
OFFICE LOCATION: Room A2718
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COURSE OFFERING September 4, 2014 to December 16, 2014
DAYS & TIMES: Lectures: Tuesday, and Thursday, 2:30 p.m. to 4:00 p.m.
Friday 1:00 p.m. to 2:30 p.m.
Labs: Friday 1:00 p.m. to 4:00 p.m.
LOCATIONS: Lectures: Tuesday and Thursday A2601
Friday A2603
Labs: A2803

COURSE DESCRIPTION

College Preparation Physics 050 will allow students to take Physics 060 at Yukon College, a Grade 12 Physics course, offered at high schools, or a pre university level Physics course offered at colleges and universities. Physics 050 is suitable for those students wishing to enter vocational or career programs that require or will benefit from Grade 11 Physics. The content of the course includes: a review of mathematics for physics, kinematics, dynamics, vectors, momentum and conservation, energy, heat, and electricity.

LEARNING OUTCOMES:

Upon completion of Physics 050, students will be able to:

- Meet the competencies as stated for ABE Advanced Level Physics located in the ABE in BC Articulation Handbook <http://www.aved.gov.bc.ca/abe/docs/handbook.pdf>
- Obtain the prerequisite body of knowledge and skills that will provide a basis for further academic and career/vocational training
- Appreciate and apply the physics of everyday life
- Appreciate and apply the scientific method to investigations of all phenomena
- Communicate effectively, particularly to the scientific community using the language of physics and mathematics.
- Carry out all duties in an ethical, professional manner, including the collection of data.
- Work effectively as a member of a team.
- Handle equipment in a safe and effective manner with regard to their own safety and the safety of others.

DELIVERY METHODS/FORMAT:

This class is offered by lecture format at Ayamdigut Campus only. Approximately half the Friday classes will be labs from 1:00 p.m. until completion on or before 4:00 p.m; the remaining Fridays will be regular classes from 1:00 a.m. until 2:30 p.m. A schedule with labs times will be made available.

PREREQUISITES:

High school mathematics grade 10 (with algebra) or Yukon College Math 040 or any college equivalent; and two modules from Science 040 including Simple Machines and/or Energy. Math 050 is a co-requisite; however, it is strongly recommended that students complete Math 050, or high school mathematics grade 11, prior to enrolling in Physics 050.

COURSE REQUIREMENTS/EVALUATION:

Attendance and Participation

It is the student's responsibility to attend classes. Students who miss classes are responsible for any work missed.

Assignments

There are nine assignments to be completed. There will be 10% deducted for late assignments unless prior permission has been received from the instructor. It is the students' responsibility to attend class. Late assignments will receive deductions regardless of absences. A student planning to be away on the due date must submit the assignment prior to leaving. . Assignments will usually be returned the class following the due date. Once assignments have been returned to the class, they will no longer be accepted. If the due date is missed owing to an emergency, an alternate assignment may be given.

Labs

There are seven labs in the course. Each of the seven labs requires a detailed lab report due one week after the lab session. The collection of data must be done in the laboratory or classroom; the calculations and write-up can be done at home, therefore students must attend the lab session in order to submit a report. For this reason, consult the schedule and make any necessary arrangements. There will be 10% deducted for late reports unless prior permission has been received from the instructor. It is the students' responsibility to attend class. Late reports will receive deductions regardless of absences. Reports will usually be returned the class after the due date. Once reports have been returned they will no longer be accepted. **Students must achieve a minimum of 50% on the laboratory component to pass the course.**

Examinations

There will be two two-hour examinations in the course which are "closed book" although a formula sheet will be provided.

Evaluation

Assignments		25%
Labs*		25%
Midterm 1	Chapters 1, 3, 4, 5, & 7	25%
Midterm 2	Chapters 8, 10, 12 - 14	<u>25%</u>
Total		100%

*** A minimum 50% score must be obtained in the labs in order to receive credit for the course.**

Yukon College uses a letter grade system and calculates weighted grade point averages (GPA) on a 4.0 scale. Following are equivalents of the letter grades:

LETTER GRADE	PERCENTAGE EQUIVALENT	GRADE POINT
A+	95 – 100	4.0
A	86 – 94	4.0
A-	80 – 85	3.7
B+	75 – 79	3.5
B	70 – 74	3.0
B-	65 – 69	2.7
C+	62 – 64	2.5
C	58 – 61	2.0
C-	55 – 57	1.7
D	50 – 54	1.0
F	under 50	0.0

Rewrites

A rewrite for a failing grade on an examination (less than 50%) may be permitted at the instructor's discretion. These examinations will be written no earlier than two weeks after the date of the original examination. The mark will be recorded whether it is higher or lower than the original. However, a maximum mark of 65% will be awarded.

"No Shows"

A student who misses an examination will receive a mark of zero for that examination but may be permitted a rewrite. Exceptions may be made if a student receives prior permission from the instructor, or faces an emergency. Some form of documentation of the emergency may be required.

Plagiarism

Plagiarism involves representing the words of someone else as your own, without citing the source from which the material is taken. If the words of others are directly quoted or paraphrased, they must be documented according to standard procedures (APA). The resubmission of a paper for which you have previously received credit is considered a form of plagiarism.

Plagiarism is academic dishonesty, a serious academic offence, and will result in you receiving a mark of zero (F) on the assignment or the course. In certain cases, it can also result in dismissal from the college. And do not underestimate the impact such a situation will have on your reputation.

Electronic Devices

In order to be successful in classes and minimize distractions for others, cell phones, iPods and other electronic devices must be turned off while students are in class. In an emergency situation, the instructor may give a student permission to use a cell phone or pager.

Appropriate Language

In all areas of the college environment, students are responsible to show respect for others, swearing, or language that is discriminatory or derogatory in relation to race, sex, ethnic background, religious beliefs, age and physical condition is not appropriate.

STUDENTS WITH DISABILITIES OR CHRONIC CONDITIONS:

Reasonable accommodations are available for students with a documented disability or chronic condition. It is the student's responsibility to seek these accommodations. If a student has a disability or chronic condition and may need accommodation to fully participate in this class, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

REQUIRED TEXTBOOKS/MATERIALS:

Course Materials:

Introductory Physics by Paul G. Hewitt. (1997) Analog Press, San Francisco, USA
Yukon College, *Physics 050 Laboratory Manual*, 2014.
Scientific non-programmable calculator. Scientific graph paper (decimal, not quarter inch)

EQUIVALENCY/TRANSFERABILITY:

Yukon College Physics 050 is articulated as Advanced Algebraic Mathematics in the Adult Basic Education system (ABE) in British Columbia and Yukon. For more information see page 44 of the 2014-2015 edition of the A.B.E. in B.C. Articulation Handbook www.aved.gov.bc.ca/abe/docs/handbook.pdf
Or <http://www.bctransferguide.ca/program/abe/>

ABE Advanced Physics is now considered an External Credential by the British Columbia Ministry of Education. For more information see page 22 of the A.B.E. Articulation Handbook or search "ABE Advanced Physics" at http://www.bced.gov.bc.ca/datacollections/course_registry_web_search/simple-search.php

TOPIC OUTLINE/ SYLLABUS

Physics 050 covers the Core Topics for Physics: Advanced Level set out in A.B.E. in B.C. Articulation Handbook <http://www.aved.gov.bc.ca/abe/docs/handbook.pdf>

More Specifically:

Measurement

- SI Units
- Dimensional Analysis
- Significant Digits
- Measurement
- Precision and Accuracy
- Graphical Analysis
- Creating Equations
- Solving Problems Using Equations

Motion

- $\bar{d}-t$ Graphs
- Average and Instantaneous Velocities
- Velocity – Time Graphs
- Vectors and Scalars
- Relative Velocity
- Acceleration
- Average and Instantaneous Velocity

Forces

- Newton's First Law
- Newton's Second Law
- Newton's Third Law
- Gravity, mass, Weight
- Universal Law of Gravity
- The Normal Force
- Friction
- Springs

Momentum and Its Conservation

- Momentum and Impulse
- Conservation of Momentum

Energy and Work

- Work
- Power
- Work, Power, Force, and Energy
- Kinetic Energy
- Gravitational Potential Energy
- Conservation of Energy
- Efficiency

Thermal Energy

- Kinetic Molecular Theory
- Thermal Energy and Temperature
- Heat , Thermal Energy Transfer
- Specific Heat Capacity
- Law of Conservation of Energy
- Changes of State and Latent Heat
- Calorimetry

Electricity

- Electric Charge, Creation and Measurement
- Coulomb's Law
- Current
- Electric Circuits
- Electric Potential
- Resistance and Ohm's Law
- Simple Circuits
- Series Circuits
- Parallel Circuits
- Combined Series-Parallel Circuits
- Power
- Ammeters and Voltmeters

Modern Physics

- Space Time
- Special Theory of Relativity
- Relativistic Mechanics
- Atomic and Nuclear Physics
- Nuclear Decay
- Carbon Dating
- Atomic Fission and Fusion