

	School of Academic & Skill Development
	Physics 050
	Principles of Physics
	Fall 2024
	Number of Credits: 3
Course Outline	

INSTRUCTOR	Inderjeet Kaur	OFFICE HOURS	By Appointment
OFFICE		CLASSROOM	A2603
E-MAIL	inderjeetkaur@yukonu.ca	CLASS TIME	Mon. & Wed. 2:30-3:50 PM Lab Tues. 2:30-5:20 PM, A2801
TELEPHONE	N/A	CRN	10041
Liberal Arts office: Ayamdigut Campus A2501, liberalarts@yukonu.ca, 867-668-8770			

COURSE DESCRIPTION

Physics 050 will allow students to take Physics 060 at Yukon University, a Grade 12 Physics course offered at high schools, or an algebra-based 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 as well as geometric optics.

COURSE REQUIREMENTS

Corequisite(s): High school Mathematics 11 (Pre-Calculus from BC/Yukon or with Algebra elsewhere) or Yukon University Math 050 or any college equivalent. It is strongly recommended that students complete Math 050, or high school algebraic mathematics grade 11, prior to enrolling in Physics 050. As there are many formal laboratory reports to write a demonstrated writing ability is also required. Successful completion of Yukon University English 030 (English 040 prior to 2016) would be considered the minimum.

*Students must also register in the mandatory lab component of the course, Physics 050L

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at:

<https://www.yukonu.ca/admissions/transfer-credit>

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to meet the learning outcomes for ABE Advanced level Physics located in the 2018-2019 BC Adult Basic Education Articulation Handbook which may be found at <http://www.bctransferguide.ca/>

- 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.

COURSE FORMAT

Weekly breakdown of instructional hours

Students are expected to attend 1.5 hr. lectures twice a week, for a total of approximately 42 hrs. Homework and assignments are completed outside of class time, and it is expected these will require an additional 3-4 hrs. of work per week. It is important to note that the time required for successful course completion will vary by individual.

There is one lab per week for at least 2.5 hrs. each. Lab reports will require an additional 1-2 hrs. to complete.

Delivery format

This course and the lab are delivered with set meeting times in-person on campus (synchronous face-to face). A hybrid format delivered both in-person on campus and by Zoom may be available for lectures on request for distance students but lab component would remain in-person.

EVALUATION

Engagement and Participation

Regular attendance and engagement, including completing homework and assignments, will provide the best opportunity for success in the course. Laboratories include carrying out experiments and the collection of data required to submit results and a written report, therefore students must attend the labs. Missed labs will not be repeated. Students arriving late to lab sessions may be refused entry for safety and disruption purposes.

Assignments

Short, question-based assignments will be assigned for each chapter covered in the course. Assignments account for 20% of the course mark. Students are expected to respect the assignment due dates. Late submissions will receive 5% mark deduction each day after due date. No submissions will be accepted once the assignments are graded and returned, usually within 3-5 days of due date.

Quizzes and Tests

There is one mid-term exam worth 20% and a final exam at the end of course worth 30%. Both the exams account for 50% of the total course mark. If an exam is missed under special circumstances, students are responsible for arranging an alternate exam date with their instructor within a week of original exam date.

Laboratories

There are seven labs in the course, most of which require the submission of results and a detailed lab report. The labs account for 30% of the course mark. ***Students must achieve a minimum of 50% on the laboratory component of the course in order to pass the course.**

Summary

Assignment	20%
Midterm	20 %
Final exam	30 %
Laboratory marks*	30 %* See above
Total	100%

COURSE WITHDRAWAL INFORMATION

Students may officially withdraw from a course or program without academic penalty up until two-thirds of the course contact hours have been completed.

See withdrawal information at www.yukonu.ca/admissions/money-matters

Refer to the YukonU website for important dates: www.yukonu.ca/admissions/important-dates

Refunds may be available. See the Refund policy and procedures at www.yukonu.ca/admissions/money-matters

TEXTBOOKS & LEARNING MATERIALS

Cutnell & Johnson, Physics fifth edition (2001), available in library for loan.

OpenStax, Rice University (2022). College Physics 2e.

Yukon University Physics 050 Laboratory Manual. Supplied as a PDF on Moodle.

Scientific non-programmable calculator

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact [Accessibility Services](http://www.yukonu.ca/accessibility-services) for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE

Physics 050 covers the Core Topics as stated for ABE Advanced Level Physics located in the 2018-2019 BC Adult Basic Education Articulation Handbook which may be found at <http://www.bctransferguide.ca/>

More Specifically:

Measurement

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

Using Equations Kinematics

- Average and Instantaneous Velocities
- D-T and V- T Graphs
- Vectors and Scalars
- Relative Velocity
- Acceleration
- Average and Instantaneous Velocity

Dynamics

- Newton's First Law
- Newton's Second Law
- Newton's Third Law
- Gravity, mass, Weight
- Universal Law of Gravity

The Normal Force

- Friction
- Elasticity: Springs, Stress and Strain

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

Waves

- Wave properties:
 - Wavelength, amplitude, period, frequency and velocity
 - Types of waves
- Electromagnetic waves:
 - Maxwell's equations
 - Production
- The Electromagnetic Spectrum

Geometric Optics

- The law of reflection
- Plane mirrors
- Refraction
 - The law of refraction
 - Index of refraction and Snell's law
 - Apparent depth of Critical angle
 - Dispersion of white light
- Lens
 - Image formation by lens
 - Ray diagrams

- o The thin lens equation
- Mirrors
- o Image formation by mirrors
- o Ray diagrams
- o The thin lens equation for mirrors

