Physics (PHYS) 210

Conceptual Physics (Revision 3)

Status:	Replaced with new revision, see the **course listing** for the current revision
Delivery mode:	**Individualized study online** with **eText**
Credits:	3
Area of study:	Science
Prerequisites:	None
Precluded:	None
Challenge:	PHYS 210 has a challenge for credit option.
Faculty:	**Faculty of Science and Technology**

Overview

PHYS 210 is an introductory post-secondary physics course that follows a non-mathematical approach and focuses on understanding central concepts in physics. The course can be taken by students in liberal arts, education, business, medical services, and other disciplines in which a basic understanding of physics is required. It can also be used as a bridge course to science and engineering for students without high school physics. The emphasis of this course is on three main topics: mechanics, properties of matter, and heat.

Outline

PHYS 210 consists of 18 units:

- Unit 1: About Science
- Unit 2: Newton's First Law of Motion
- Unit 3: Linear Motion
- Unit 4: Newton's Second Law of Motion
- Unit 5: Newton's Third Law of Motion
- Unit 6: Momentum
- Unit 7: Energy
- Unit 8: Rotational Motion
- Unit 9: Gravity
- Unit 10: Projectile and Satellite Motion
- Unit 11: The Atomic Nature of Matter
- Unit 12: Solids
- Unit 13: Liquids
- Unit 14: Gases
- Unit 15: Temperature, Heat, and Expansion
- Unit 16: Heat Transfer
- Unit 17: Change of Phase
- Unit 18: Thermodynamics

Learning outcomes

Upon successful completion of this course, you should be able to

- explain the differences between science and art and discuss the main features of scientific methods.
- discuss and formulate basic kinematics in one and two dimensions, including uniform rotation.
- state Newton's three laws of motion and discuss the dynamics of moving objects.
- discuss the principles of conservation of energy, conservation of linear momentum, and conservation of angular momentum and give examples of their applications.
- state Newton's law of universal gravitation and use it to explain ocean tides and satellite motion.
- discuss the atomic and molecular nature of matter and explain the periodic table of the elements.
- define the solid, liquid, gaseous, and plasma states of matter and discuss relevant concepts such as elasticity, buoyancy, capillarity, and Bernoulli's principle.
- explain the notions of temperature, heat, specific heat capacity, thermal expansion, and heat transfer.
- describe the different types of phase transformations and explain relevant phenomena such as the formation of clouds.
- state the first and second laws of thermodynamics and explain the concept of the heat engine.

Evaluation

Your final grade in PHYS 210 is based on the marks you achieve in four quizzes, one course project, and a final examination. To pass the course, you must achieve at least 50% on the final exam and an overall course grade of at least 50%. The following chart summarizes the evaluation activities and their credit weight:

Activity	Weight
Quiz 1	10%
Quiz 2	10%
Quiz 3	10%
Quiz 4	10%
Course Project	20%
Final Exam	40%
Total	**100%**

The **final examination** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the **Exams and grades** section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** .

Materials

Hewitt, P. G. (2021). *Conceptual Physics* (13th ed.). Pearson. (eText)

eText

Registration in this course includes an electronic textbook. For more information on **electronic textbooks** , please refer to our **eText Initiative site** .

Other Resources

All other learning resources will be available online.

Challenge for credit

Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.

Full information about **challenge for credit** can be found in the Undergraduate Calendar.

Evaluation

To **receive credit** for the PHYS 210 challenge registration, you must achieve a grade of at least **C– (60 percent)** on the challenge for credit examination.

Challenge for credit course registration form

Important links

- **Academic advising**
- **Program planning**
- **Request assistance**
- **Support services**

Opened in Revision 3, August 10, 2022

Updated July 22, 2024

View **previous revision**