PHYS 030, Physics 30

5 credits, 6 hours lecture, 2 hours lab on alternate weeks

Course Description

A review of Physics 025, followed by the study of electric and magnetic fields, electromagnetic radiation, and conservation of energy.

Alberta Education Course Equivalency: Physics 30

Pre and Co-requisites

Prerequisite: PHYS 025 or equivalent or permission from Program Chair.

Course Learning Outcomes (CLOs)

Upon successful completion of the course, the student shall be able to:

CLO1 Momentum and Impulse

- Define momentum as a vector quantity
- Explain impulse and momentum using Newton's laws of motion
- Explain that momentum is conserved in an isolated system
- Compare and contrast elastic and inelastic collisions
- Analyze law of conservation of momentum as applied to one dimension and two dimension interactions

CLO2 Electric Forces and Electric Fields

- Explain electric charge and Coulombs Law
- Explain the behavior of electric charges, using the laws that govern electrical interactions
- Explain the different charging methods
- Use Coulomb's law to calculate the electric force on a point charge due to a second point charge
- Determine the magnitude and direction of electric force on a point charge due to one or more stationary point charges in a plane
- Define vector fields
- Determine the magnitude and direction of electric field at any point due to one or more stationary point charges in a plane
- Define electric potential difference as a change in potential energy per unit charge
- Define uniform electric field and calculate the electric field between two parallel charged plates.
- Define electric current as the amount of charge passing a reference point per unit time
- Define Ohm's law and simple problems

CLO3 Magnetic Forces and Fields

- Explain magnetic field around a current carrying conductor and solenoid
- Explain left hand rules
- Explain the effect of an external magnetic field on a current carrying conductor
- Explain the interaction between an external magnetic field and a moving charge
- Explain the effect of moving a conductor in an external magnetic field
- Describe the principle of ac generators and transformers

CLO4 Electromagnetic Radiation

- Explain the nature and behavior of EMR, using the wave model
- Explain the photoelectric effect, using the quantum model.

CLO5 Atomic Physics

- Describe the electrical nature of the atom
- Describe the quantization of energy in atoms and nuclei
- Describe nuclear fission and fusion as powerful energy sources in nature

Evaluation

Assessment Type	Percentage
Unit Assignments	15%
Quizzes	20%
Tests	25%
Laboratory	10%
Final Exam	30%

Course Completion Requirements

Minimum passing mark of 50% or D is required.

Grading Scale

4.0 Grade Scale	Alpha Grade	Percentage Grade
4.0	A+	93-100
4.0	A	85-92.9
3.7	A-	80-84.9
3.3	B+	77-79.9
3.0	B	74-76.9
2.7	B-	70-73.9
2.3	C+	67-69.9
2.0	C	64-66.9
1.7	C-	60-63.9
1.3	D+	55-59.9
1.0	*D	50-54.9
0.0	F	0-49.9

Land Acknowledgement

We respectfully acknowledge that Keyano College is on Treaty No. 8 Territory, the ancestral and traditional territory of the Cree, Dene, and Métis people.

Review Date: November 26, 2024

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Students will be notified of any significant changes as soon as possible. Keyano College is not responsible for any inconvenience or disruption caused by these changes. It is the responsibility of the students to stay informed about any updates or modifications to their courses.