PHYS 025 Physics 25

6 credits, 6 hours lecture

Course Description

Main topics include triangle trigonometry, vectors and vector diagrams, space body diagrams, relative velocity, uniform acceleration, Newton's three laws, inclined planes, pulley systems, friction, work, power, energy, circular motion, interaction between bodies, and introduction to waves.

Alberta Education Course Equivalency: Science 10 (Physics unit) and Physics 20

Pre and Co-requisites

Prerequisite**:** MATH 10C or equivalent or permission from the Program Chair

Course Learning Outcomes (CLOs)

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

CLO1 Math Review

- Identify the number of significant digits in the given data
- Round the number to the required number of significant digits
- Apply the rules of addition/subtraction and multiplication /division
- Represent the number in scientific notation with the correct number of significant digits
- Apply factor unit method in conversion of units within SI system and from SI to imperial system
- Isolation of a variable in the given equation
- Solve a right triangle

CLO2 Vectors

- Define Vectors and Scalars
- Compare and contrast scalar and vector quantities
- Represent a vector in RCS and using 'of ' notation
- Determine the horizontal and vertical components of a vector
- Perform addition of vectors using tail to tip method and component method
- Calculating Average Speed and Average Velocity
- Interpret the motion of one object relative to another.
- Solving relative velocity problems

CLO3 Kinematics

- Define speed, distance, position, displacement, velocity and acceleration
- Define and analyze uniform motion and uniform accelerated motion
- Explain a two-dimensional motion and analysis

- Analysis of freely falling objects
- Analysis of objects thrown upwards, downwards and dropped
- Analysis of projectiles thrown horizontally and thrown at an angle

CLO4 Dynamics

- Explain Newton's laws of motion
- Explain that a non- zero net force causes a change in velocity and analysis
- Apply the laws to solve motion problems
- Explain free Body diagram of objects on a horizontal surface and on an incline
- Describe work as transfer of energy
- Solve Work, Power, Potential energy and Kinetic energy problems
- Explain law of conservation of mechanical energy and solve related problems
- Explain work - energy theorem for net force and solve related problems

CLO5 Circular motion & Universal Gravitation

- Define uniform circular motion
- Solve speed, centripetal acceleration, centripetal force of objects in a circular path
- Explain and apply Newton's Universal law of gravitation

Evaluation

Assessment Type	Percentage
Assignments	10%
Quiz	20%
Mid Term	30%
Final Exam	40%
Total	100%

General course evaluation (Assignments %, Tests %, Exams %). This is the overarching evaluation scheme. The course syllabus will provide the details on how each category will be assessed, e.g., how many tests there are and the weight of each test. Not all assessments need to be used in the course.

Course Completion Requirements

A grade of 60% (1.7, or C-) is required for progression. The minimum standard for passing this course is a grade of 50% (1.0, or D).

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: March 4, 2024

Every effort has been made to ensure that information in this course outline is accurate at the time of publication. Keyano College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.