

FRANKLIN-SIMPSON HIGH SCHOOL

Course Name: Physics

Unit Name: Two-Dimensional Motion

Quality Core Objectives:

Unit 2 Two-Dimensional Motion	
A.1. Scientific Inquiry	a. Identify and clarify research questions and design experiments
	b. Design experiments with controlled variables and appropriate numbers of trials
	c. Collect, organize, and analyze data accurately and use appropriate techniques and devices
	d. Interpret results and draw conclusions, revising hypotheses as necessary and/or formulating additional questions or explanations
	e. Write and speak effectively to present and explain scientific results, using appropriate terminology and graphics
	f. Safely use laboratory equipment and techniques when conducting scientific investigations
	g. Routinely make predictions and estimations
A.2. Mathematics and Measurement in Science	a. Distinguish between precision and accuracy with respect to experimental data
	b. Use appropriate SI units for length, mass, time, temperature, area, volume, and density; describe the relationships among SI unit prefixes (e.g., centi-, milli-, kilo-) and how to convert between English units and SI units
	f. Solve for unknown quantities by manipulating variables
	g. Use graphical, mathematical, and/or statistical models to express patterns and relationships inferred from sets of scientific data
B.2. One-and-Two Dimensional Motion	a. Write equations for the horizontal and vertical components of both a projectile's displacement over time and its velocity over time
	b. Calculate the displacement, velocity, and altitude over time for a projectile that is launched at a given initial velocity from a launch site at a given altitude above a horizontal plane
	c. Relate the magnitude of the centripetal acceleration to the speed or rate of revolution and to the radius of orbit for a particle undergoing uniform circular motion
	d. Describe the direction of the velocity and acceleration vectors for a particle undergoing uniform circular motion at any given position in its orbit
	e. Determine vector sums by graphical and mathematical means
	f. Resolve a vector into mutually perpendicular components

Purpose of the Unit:

The purpose of this unit is for students to gain an understanding of motion in more than one dimension (ex: projectile motion). Students will be able to describe, calculate, graph and interpret data and information that shows two-dimensional motion. Students will also be able to draw and calculate vectors as well as solve vector addition.

Prerequisites:

1. Understanding of speed, velocity, acceleration.
2. Understanding of SI units of physics.
3. Understanding of graphing

Daily Lesson Guide

Day	Lesson Content and Objectives	Focus Questions	Critical Thinking (High Yield / Literacy /LTF/etc.)	Engagement	Assessment and/or Accommodations
X	Standard Number -This is what I'm doing for activities.	This is where I put focus questions.	How do I bring things up to the next level?	Can I incorporate any of the Antonetti engagement strategies?	How do I know that students are LEARNING the objectives?
1	Vectors - Define, draw Practice Vector v. Scalar	How do vectors show motion? Why is showing motion important in understanding motion?		Sketch vectors of motion (or force) on picture of motion. Illustrate where motion (or force) occurs on picture.	
2-3	Vector Addition (1 dimension) Graphical Addition (1 & 2 dimension) -Vector Activity (Frictional forces in 2 dimensions)		Vector addition via trig functions (SIN, COS, TAN)		

