Physics Curriculum Bundle # 2

Title	Suggested Dates
Kinematics in 2 Dimensions	9/14 – 10/2 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
The motion of objects in two dimensions can be analyzed through separate perpendicular components. Certain physical quantities are comprised of both a magnitude and direction.	How do motions in different directions produce the resulting motion of an object?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
3 Uses critical thinking and scientific problem solving to make informed decisions. 3B Express laws symbolically and employ mathematical procedures including vector addition and right triangle geometry to solve physical problems.	Including • Understand mathematical functions as representations of laws of physics • Manipulate physics equations to solve for variables Such as: o Algebraic operations o Identifying and isolating variables in equations o Dimensional Analysis o Right-triangle geometry Including ▪ Pythagorean theorem ▪ Trigonometric functions & relationships o Vector representation of physical quantities o Vector components o Vector mathematical operations Including ▪ Adding and subtracting vectors (graphical & analytical) Such as ▪ 2-D displacements ▪ Velocity vectors for objects	Vector Scavenger Hunt Lab – displacement vectors to locate prize. (phys_2_VectorScavHunt) Physlet Website – http://webphysics.davidson.edu/physlet_resources/bu_semester1/index.html Vector Addition – explaining vector addition using graphical methods. (phys_2_VectorAddition) Vector resolution problems (Phys_2_vectorprob1, Phys_2_VectorProbs2, Phys_2_VectorProbs3) Vector Addition Applet – http://hyperphysics.phy-astr.gsu.edu/hbase/vect.html

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	being the subject of two different motions.	
4 The student knows the laws governing motion. 4B Analyze examples of uniform and accelerated motion including linear, projectile, and circular.	Including --- Projectile • Resolving 2-D motion into independent motions • Flat projectiles Including o Range o Time of flight • Angled projectiles Including o Relation between range and angle of projection Such as ▪ Determine range, time of flight, and maximum height	Horizontal Projection Lab – predicting range of flat projectile based on measured launch velocity using stopwatch or photogate. (Lab – , Quiz – phys_1_flatprojectilelabquiz) Angled Projection Lab – use projection at arbitrary angles to determine optimal angle. (phys_1_ProjectileMotion) Physlets website – http://webphysics.davidson.edu/physlet_resources/bu_semester1/index.html
4 The student knows the laws governing motion. 4E Identify and describe motion relative to different frames of reference.	Including • Analyze motion with respect to a specified origin • Analyze motion with respect to objects moving with constant velocity.	Relative velocity website – http://www.glenbrook.k12.il.us/gbssci/phys/Class/vectors/u3l1f.html Suggested Equipment – projectile launcher, air rockets, photogates, stopwatches, motion detector, meter stick, graphing software, ballistics cart.