


Physics Curriculum Bundle # 1

Title		Suggested Dates
Kinematics in 1 Dimension		8/25 – 9/11 (9 days)

Big Idea/Enduring Understanding	Guiding Questions
The motion of objects can be described qualitatively as well as quantitatively through the use of graphs and mathematical equations.	How can we describe the 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)
<p>1 For at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.</p> <p>1A Demonstrate safe practices during field and laboratory investigations.</p>	<p>Such as</p> <ul style="list-style-type: none"> • Use of safety glasses in projectile motion experiments • Proper operation of lasers in optics experiments • Proper handling of electrical equipment 	<p>Texas Safety Standards</p>
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2A Plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology.</p>	<p>Including</p> <ul style="list-style-type: none"> • Design experimental methods to verify theories <ul style="list-style-type: none"> ○ Equipment needed ○ Data to be taken ○ Data analysis required 	
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2B Make quantitative observations and measurements with precision.</p>	<p>Including</p> <p>--- Appropriate use of measuring tools</p> <p style="padding-left: 20px;">Such as</p> <ul style="list-style-type: none"> • Zeroing/calibrating instruments • Differentiate between accuracy and precision 	
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2C Organize, analyze, evaluate, make inferences, and predict trends from data.</p>	<p>Including</p> <p>--- Organize data in a meaningful form</p> <p style="padding-left: 20px;">Such as</p> <ul style="list-style-type: none"> • Data tables <p>--- Identify appropriate data analysis techniques</p> <p style="padding-left: 20px;">Such as</p>	

Physics Curriculum Bundle # 1

	<ul style="list-style-type: none"> • Graphical representations • Mathematical functions to fit data 	
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2D Communicate valid conclusions.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Summarize data trends --- Evaluate data quality & error sources --- Error analysis <ul style="list-style-type: none"> Such as <ul style="list-style-type: none"> • Percent error • Absolute error --- Use results to validate/invalidate theory 	
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2E Graph data to observe and identify relationships between variables.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Appropriate graphical representations of data <ul style="list-style-type: none"> Including: <ul style="list-style-type: none"> • Organization of axes • Determine significance of slope • Recognize data relationships Such as <ul style="list-style-type: none"> • Linear • Exponential • Polynomial • Inversely proportional 	
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2F Read the scale on scientific instruments with precision.</p>	<p>Including</p> <ul style="list-style-type: none"> • Meterstick • Calipers • Triple beam balance • Spring scale <p>Such as</p> <ul style="list-style-type: none"> • Graduated cylinder • Analog ammeter, voltmeter • Choosing appropriate scale on digital multimeter 	<p>Specific Gravity Lab – as introduction to measurement techniques (phys_1_SpecificGravity)</p>
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3A Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p>Including</p> <ul style="list-style-type: none"> --- Accept/reject statements strictly based upon scientific evidence <ul style="list-style-type: none"> Such as <ul style="list-style-type: none"> • Experimental results • Develop valid/testable hypotheses • Making valid extensions of accepted existent theories 	

Physics Curriculum Bundle # 1

<p>4 The student knows the laws governing motion.</p> <p>4A Generate and interpret graphs describing motion including the use of real-time technology</p>	<p>Including</p> <p>--- Explain the information on graphs</p> <ul style="list-style-type: none"> • Position-time • Velocity-time • Acceleration-time <p>--- Real-time technology</p> <p>Such as</p> <ul style="list-style-type: none"> • Motion detectors • Photogates 	<p>Motion Detector Lab – using motion detector to graphically represent constant and accelerated motion. (phys_1_MotionDetector)</p> <p>Physics Classroom Website – http://www.glenbrook.k12.il.us/gbssci/Phys/Class/BBoard.html</p> <p>Description of Motion – http://hyperphysics.phy-astr.gsu.edu/hbase/mot.html#motcon</p>
<p>4 The student knows the laws governing motion.</p> <p>4B Analyze examples of uniform and accelerated motion including linear, projectile, and circular.</p>	<p>Including</p> <p>--- Linear</p> <ul style="list-style-type: none"> • Solve displacement problems • Solve velocity problems • Solve acceleration problems involving uniform acceleration and free fall 	<p>Free Fall Lab – measuring acceleration due to gravity for object in free fall, introducing concepts of absolute & relative error. (phys_1_freefalllab)</p> <p>Suggested Equipment – photogates, carts & ramps, stopwatches, motion detector, meter stick, graphing software, dot timer.</p>