Students will:

PHY1: Investigate and analyze, based on evidence obtained through observation or experimental design, the motion of an object using both graphical and mathematical models (e.g., creating or interpreting graphs of position, velocity, and acceleration versus time graphs for one- and two-dimensional motion; solving problems using kinematic equations for the case of constant acceleration) that may include descriptors such as position, distance traveled, displacement, speed, velocity, and acceleration. 0 = Rarely adheres to the criteria 1= Occasionally adheres to the criteria 2 = Sometimes adheres to the criteria 3= Adheres to the criteria 4 = Exceeds the criteria Place a check in the appropriate box for each of the criteria after review 0 1 2 3 4 1. Grade appropriate evidence of the science and engineering practices (SEP) is evident. 2. Grade appropriate evidence of the crosscutting concepts (CCC) is evident. 3. Grade appropriate evidence that the disciplinary core idea (DCI) is evident. 4. Materials focus on an integration of SEP's and CCC's into the in-depth learning of the DCI. 5. Learning experiences fit together coherently and help students develop proficiency on this standard. 6. Learning opportunities include instructional strategies that facilitate three-dimensional learning in an integrated fashion to support making sense of phenomena and/or designing solutions to problems through inquiry and engineering design experiences. 7. Integrates engineering and technology as significant elements in the learning experiences. 8. Provides relevant grade-appropriate connections to the math and ELA standards. Math Standards Connections Visible **ELA Standards Connections Visible** 9. Provides scaffolded supports for teachers to facilitate learning of the practices so that students are increasingly responsible for making sense of phenomena and/or designing solutions to problems. 10. Provides opportunities for grade-appropriate scientific discourse, scientific writing, and academic vocabulary in the context of the learning experience. 11. Adheres to safety rules and emphasizes the importance of safety in science procedures, labs, and experiments. STEP 1: Tabulate the total points for each column. Add column totals and transfer to compilation form.

Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Comments:

_ Reviewer Initials____

Students will:

PHY 2: Identify external forces acting on a system and apply Newton's laws graphically by usin					ee-
body diagrams to explain how the motion of an object is affected, ranging from simple to complete	ex, a	nd in	cludi	ng	
circular motion.					
a. Use mathematical computations to derive simple equations of motion for various systems using	ng N	lewto	n's s	econd	1
law.					
b. Use mathematical computations to explain the nature of forces (e.g., tension, friction, normal	l) rel	ated	to Ne	wton	's
second and third laws.					
0 = Rarely adheres to the criteria $1 =$ Occasionally adheres to the criteria $2 =$ Sometimes adh 3 = Adheres to the criteria $4 =$ Exceeds the criteria	neres	to the	crite	ria	
Place a check in the appropriate box for each of the criteria after review	0	1	2	3	4
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DCI.					
5. Learning experiences fit together coherently and help students develop proficiency on					
this standard.					
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learning in an integrated fashion to support making sense of phenomena and/or					
designing solutions to problems through inquiry and engineering design experiences.					
7. Integrates engineering and technology as significant elements in the learning					
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11. Adheres to safety rules and emphasizes the importance of safety in science procedures, labs, and experiments.					
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STEP 1: Tabulate the total points for each column. Add column totals and transfer to	1				
compilation form.					
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Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Students will:

nteraction, and the change in momentum using the impulse-momentum theorem.					
0 = Rarely adheres to the criteria $1 =$ Occasionally adheres to the criteria $2 =$ Sometimes adh $3 =$ Adheres to the criteria $4 =$ Exceeds the criteria	eres	to the	criteri	a	
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Documentation of how the standard is met. Cite examples from the material (chapter and page no nd tab name)	umbe	rs OF	R moo	lule	
Portions of the standard that are missing or not well developed in the instructional material (if an	y):				
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	Place a check in the appropriate box for each of the criteria after review	0	1	2	3	
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Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Students will:

PHY 5: Construct models that illustrate how energy is related to work performed on or by an obj different forms of energy are transformed from one form to another (e.g., distinguishing between other forms of energy such as thermal and sound; applying both the work-energy theorem and th of energy to systems such as roller coasters, falling objects, and spring-mass systems; discussing forces on energy conservation and how it affects the motion of an object). 0 = Rarely adheres to the criteria 1= Occasionally adheres to the criteria 2 = Sometimes adh	e lav the	etic, p v of c effect	onser onser	ial, a vatio ictior	nd n
3= Adheres to the criteria 4 = Exceeds the criteria					
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Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Comments:

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Students will:

PHY 7: Plan and carry out investigations to provide evidence that the first and second laws of thermodynamics relate work and heat transfers to the change in internal energy of a system with limits on the ability to do useful work (e.g., heat engine transforming heat at high temperature into mechanical energy and low-temperature waste heat, refrigerator absorbing heat from the cold reservoir and giving off heat to the hot reservoir with work being done).

- a. Develop models to illustrate methods of heat transfer by conduction (e.g., an ice cube in water), convection (e.g., currents that transfer heat from the interior up to the surface), and radiation (e.g., an object in sunlight).
- b. Engage in argument from evidence regarding how the second law of thermodynamics applies to the entropy of open and closed systems.

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Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Comments:

_ Reviewer Initials_____

Students will:

PHY 8. Investigate the nature of wave behavior to illustrate the concept of the superposition principle responsible for wave patterns, constructive and destructive interference, and standing waves (e.g., organ pipes, tuned exhaust systems). a. Predict and explore how wave behavior is applied to scientific phenomena such as the Doppler effect and Sound Navigation and Ranging (SONAR). 0 =Rarely adheres to the criteria 1= Occasionally adheres to the criteria 2 =Sometimes adheres to the criteria 4 = Exceeds the criteria 3= Adheres to the criteria Place a check in the appropriate box for each of the criteria after review 4 0 1 2 3 1. Grade appropriate evidence of the science and engineering practices (SEP) is evident. 2. Grade appropriate evidence of the crosscutting concepts (CCC) is evident. 3. Grade appropriate evidence that the disciplinary core idea (**DCI**) is evident. 4. Materials focus on an integration of SEP's and CCC's into the in-depth learning of the DCI. 5. Learning experiences fit together coherently and help students develop proficiency on this standard. 6. Learning opportunities include instructional strategies that facilitate threedimensional learning in an integrated fashion to support making sense of phenomena and/or designing solutions to problems through inquiry and engineering design experiences. 7. Integrates engineering and technology as significant elements in the learning experiences. 8. Provides relevant grade-appropriate connections to the math and ELA standards. □ Math Standards Connections Visible □ ELA Standards Connections Visible 9. Provides scaffolded supports for teachers to facilitate learning of the practices so that students are increasingly responsible for making sense of phenomena and/or designing solutions to problems. 10. Provides opportunities for grade-appropriate scientific discourse, scientific writing, and academic vocabulary in the context of the learning experience. 11. Adheres to safety rules and emphasizes the importance of safety in science procedures, labs, and experiments. STEP 1: Tabulate the total points for each column. Add column totals and transfer to compilation form.

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Portions of the standard that are missing or not well developed in the instructional material (if any):

Comments:

_ Reviewer Initials____

Students will:

PHY 9: Obtain and evaluate information regarding technical devices to describe wave propaga				nagn	etic
radiation and compare it to sound propagation. (e.g., wireless telephones, magnetic resonance in microwave systems, Ra dio D etection and R anging [RADAR], SONAR, ultrasound).	agın	ig [M	RI],		
0 = Rarely adheres to the criteria $1 = $ Occasionally adheres to the criteria $2 =$ Sometimes adh 3 = Adheres to the criteria $4 =$ Exceeds the criteria	neres	to the	crite	ria	
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Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Students will:

PHY 10: Plan and carry out investigations that evaluat	e the mathematical expl	anations of light a	as re	lated	to op	otical	
systems (e.g., reflection, refraction, diffraction, intensity						-	
0 = Rarely adheres to the criteria $1 =$ Occasionally ad 3 = Adheres to the criteria	4 = Exceeds the crite	2 = Sometimes adh eria	eres	to the	e crite	ria	
Place a check in the appropriate box for each	of the criteria after review		0	1	2	3	4
 Grade appropriate evidence of the science a evident. 	nd engineering practices	s (SEP) is					
2. Grade appropriate evidence of the crosscutt	ing concepts (CCC) is e	evident.					
3. Grade appropriate evidence that the discipli	nary core idea (DCI) is	evident.					
4. Materials focus on an integration of SEP's a the DCI.	and CCC's into the in-d	epth learning of					
Learning experiences fit together coherently on this standard.	-						
 Learning opportunities include instructional dimensional learning in an integrated fashio phenomena and/or designing solutions to pr engineering design experiences. 	n to support making ser	nse of					
 Integrates engineering and technology as sign experiences. 	gnificant elements in the	e learning					
 8. Provides relevant grade-appropriate connec Math Standards Connections Visible ELA Standards Connections Visible 	ions to the math and EI	A standards.					
 Provides scaffolded supports for teachers to that students are increasingly responsible fo designing solutions to problems. 							
10. Provides opportunities for grade-appropriate and academic vocabulary in the context of t		cientific writing,					
11. Adheres to safety rules and emphasizes the procedures, labs, and experiments.	importance of safety in	science					
STEP 1: Tabulate the total points for each column. Add	column totals and trans	fer to					
compilation form.	containin totais and trails.	101 10					

Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Students will:

PHY 11: Develop and use models to illustrate electric and magnetic fields, including how each is created (e.g., charging by either conduction or induction and polarizing; sketching field lines for situations such as point charges, a charged straight wire, or a current carrying wires such as solenoids; calculating the forces due to Coulomb's laws), and predict the motion of charged particles in each field and the energy required to move a charge between two points in each field.

0 = Rare	by adheres to the criteria $1 = $ Occasionally adheres to the criteria $2 =$ Sometimes adh	eres	to the	e crite	ria	
	3 = Adheres to the criteria $4 =$ Exceeds the criteria	iteria	ì			
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Documentation of how the standard is met. Cite examples from the material (chapter and page numbers OR module and tab name)

Portions of the standard that are missing or not well developed in the instructional material (if any):

Students will:

PHY 12: Use the principles of Ohm's and Kirchhoff's laws to design, construct, and analyze construct analyze construct and analyze construct analyze construct and analyze construct and analyze construct and analyze construct analyze const	ombir	natior	i circi	uits	
using typical components (e.g., resistors, capacitors, diodes, sources of power). 0 = Rarely adheres to the criteria 1= Occasionally adheres to the criteria 2 = Sometimes adheres to the	criteri	a			
3 = Adheres to the criteria 4 = Exceeds the criteria Place a check in the appropriate box for each of the criteria after review	0	1	2	2	4
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