

Planned Course: Physics I Unit: Momentum	Course Number: S403 Grade Level: 11-12	Department: Science	
Estimated Time: 5 weeks	Level/Track:	Date Approved: 8/24/09	
PA Academic Standards	Core Concepts (in question format) • Skills/Knowledge	Activities/Strategies/Study Skills (identify some activities as remedial or enrichment activities)	Assessments (include types and topics)

<p>3.1.12 Unifying Themes</p> <p>B. Apply concepts of models as a method to predict and understand science and technology.</p> <p>C. Assess and apply patterns in science and technology.</p> <p>D. Analyze scale as a way of relating concepts and ideas to one another by some measure.</p> <p>3.2.12 Inquiry and Design</p> <p>A. Evaluate the nature of scientific and technological knowledge.</p> <p>B. Evaluate experimental information for appropriateness and adherence to relevant science processes.</p> <p>3.4.12 Physical Science, Chemistry and Physics</p> <p>A. Apply concepts about the structure and properties of matter.</p>	<p>► What is Linear Momentum?</p> <ul style="list-style-type: none"> Describe linear momentum as a method to describe linear motion of an object. Calculate momentum by its definition $p=mv$. <p>► How can objects of different mass have the same momentum.</p> <ul style="list-style-type: none"> Describe how moving objects with differing masses can have the same momentum because momentum depends upon speed as well as mass. Make calculations of the momentum of various moving objects. <p>► Is momentum a vector quantity?</p> <ul style="list-style-type: none"> Discuss the vector nature of momentum in that it is dependent upon direction as well as speed. <p>► What impulse?</p>	<ul style="list-style-type: none"> Study text Take notes on additional explanations from lectures Do homework problems from text and worksheets Take notes on explanations from lectures. Engage in discussions of momentum and its use in defining motion. Demonstrate problem solving techniques at the blackboard. Do computer research on momentum. Answer homework questions from text and/or worksheets. (Ch 8 pgs 138 thru 143) Use scientific method while performing laboratory experiments. In first lab study conservation of momentum during explosive separation. Study text Chapter(s) 8, "Momentum" Take notes from text reading assignments and 	<ul style="list-style-type: none"> Completion of homework. Discussion of homework assignments. Class participation in discussions of topics surrounding everyday events illustrating the assignments. Written reports of laboratory exercises. Class participation Written Chapter test Written pop quiz(s) Written reports of laboratory exercises Teacher observation of performance in LAB environment. Computer modeling of problems using IP
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<p>B. Apply and analyze energy sources and conversions and their relationship to heat and temperature.</p> <p>C. Apply the principles of motion and force.</p> <p>3.7.12 Technological Devices</p> <p>B. Evaluate appropriate instruments and apparatus to accurately measure materials and processes.</p> <p>D. Evaluate the effectiveness of computer software to solve specific problems.</p> <p>B. Apply concepts of models as a method to predict and understand science and technology.</p> <p>C. Assess and apply patterns in science and technology.</p> <p>D. Analyze scale as a way of relating concepts and ideas to one another by some measure.</p>	<ul style="list-style-type: none"> • Describe impulse as a change in an objects momentum. • Describe impulse by its formula $\Delta p = F\Delta t$. • Use impulse and momentum to solve problems in kinematics. <p>► Is Momentum conserved?</p> <ul style="list-style-type: none"> • Describe and calculate the total momentum of two objects during various types of collisions. • State the law of conservation of momentum. • make predictions regarding final velocities of objects after collision when given the initial velocities. <p>► Are there any differences in collisions?</p> <ul style="list-style-type: none"> • Identify the different types of collisions. • Determine the effect on kinetic energy of a 	<p>additional explanations from lectures.</p> <ul style="list-style-type: none"> • Answer homework questions from text and from worksheets. • Perform laboratory experiments dealing with: Conservation of Momentum Collision in 2 Dimensions 	
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	<p>perfectly inelastic collision.</p> <ul style="list-style-type: none"> • Compare conservation of energy and momentum in perfectly inelastic collisions and elastic collisions. • Calculate final velocities of objects in various collision types. 				
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