

**Key Elements: Momentum****Estimated Time: 9–11 hours**

By the end of this course, students will have an understanding of momentum and the role it plays in various collisions and explosions.

*Vocabulary*

collisions, explosions, impulse (change in momentum), momentum

*Knowledge*

- momentum (initial and final)
- impulse
- isolated, one-dimensional systems
- law of conservation of momentum
- collisions and explosions

*Skills and Attitudes*

- conduct appropriate experiments
- systematically gather and organize data from experiments
- produce and interpret graphs (e.g., slope and intercept)
- verify relationships (e.g., linear, inverse, square, and inverse square) between variables
- apply models (e.g., physics formulae, diagrams, graphs) to solve a variety of problems
- use appropriate units and metric prefixes

## MOMENTUM

Prescribed Learning Outcomes	Suggested Achievement Indicators
<p><i>It is expected that students will:</i></p>	<p><i>The following set of indicators may be used to assess student achievement for each corresponding prescribed learning outcome.</i></p> <p><i>Students who have fully met the prescribed learning outcome are able to:</i></p>
<p>F1 apply the concept of momentum in one dimension</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> define <i>momentum</i></li> <li><input type="checkbox"/> solve a variety of problems involving <ul style="list-style-type: none"> <li>– momentum</li> <li>– mass</li> <li>– velocity</li> </ul> </li> <li><input type="checkbox"/> define <i>impulse</i> (i.e., change in momentum)</li> <li><input type="checkbox"/> solve a variety of problems involving <ul style="list-style-type: none"> <li>– momentum (initial and final)</li> <li>– impulse</li> <li>– net force</li> <li>– time</li> </ul> </li> <li><input type="checkbox"/> state the law of conservation of momentum for isolated, one-dimensional systems</li> <li><input type="checkbox"/> solve problems, using the law of conservation of momentum (e.g., collisions and explosions) to determine <ul style="list-style-type: none"> <li>– momentum (initial and final)</li> <li>– velocity (initial and final)</li> <li>– mass</li> </ul> </li> </ul>