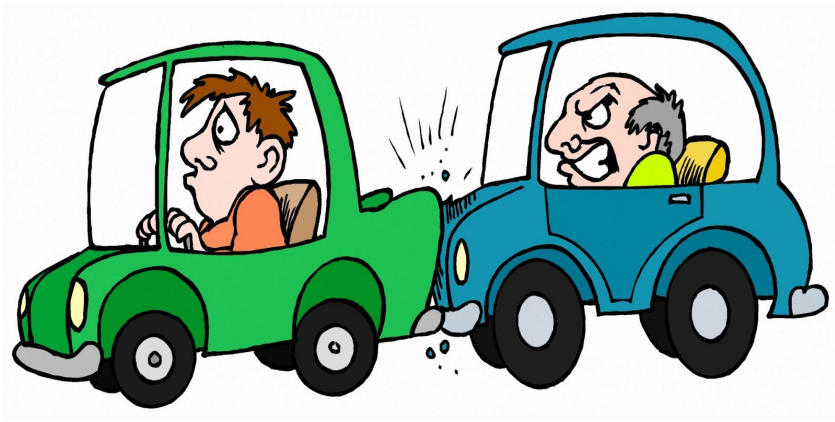

Course: Physics 12
Teacher: Amir Farrokh
Unit: Energy, Impulse & Collision
Date: April
Duration: About 3-4 weeks

Description: The difference between the concept of power, energy, force and impulse had been always a source of confusion among students. As force is the multiplication of mass and acceleration and momentum is multiplication of mass and velocity, differing between them out of the world of mathematics is a very important goal in this chapter. Students need to ask themselves and answer questions like: what makes paintball balls dangerous but not table-tennis balls? How come bullets are deadly but not paintball balls? Also, what happens when the resultant of internal forces in a system is not zero? What kind of collision is this one?

	Big Ideas	**Essential Questions**
Understand	Momentum is conserved within a closed and isolated system.	How does a ballistic pendulum show conservation laws?
	Forces can cause linear and circular motion.	Under what conditions do forces not cause linear or circular motion?

<table>
<tr><td rowspan="4">Do</td><td colspan="2">Core Competencies</td></tr>
<tr><td>Creative Thinking; (3) Critical Thinking; (4) Personal Awareness and Responsibility</td><td>● Reasoning and logic
Demonstrate fluent and strategic thinking
● Estimate reasonably
Demonstrate understanding of the possible outcomes and not accepting any numbers out of range
● Apply
Use the physical knowledge to solve real-life questions
● Multiple Strategies and Model Connected
Understand the concept and be able to change their perspective as well as gain ability to link different ideas
● Explain and justify Communicate Reflect
Be able to criticize their own work via discussing</td></tr>
<tr><td colspan="2">Curricular Competencies</td></tr>
<tr><td>Formulate multiple hypotheses and predict multiple outcomes</td><td>Which activities, projects, exercises or discussions will teach this Curricular Content?

1. Class discussion of how impulse and collision are related
2. Discussions of the Fundamental of Newton’s laws
3. Consider worked examples and analyse steps
4. Discussion of the basis of the conservation of energy and momentum

Through class discussions, independent work and self-reflection, students will have the opportunity to reinforce the following First Peoples Principles of Learning:

● Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits and the ancestors.
● Learning is holistic, reflexive, reflective, experimental, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
● Learning is embedded in memory, history, and story.
● Learning involves patience</td></tr>
</table>

	Curricular Content	
Know	Uniform circular motion: centripetal force and acceleration changes to apparent weight	*Using virtual labs and applications or websites like Gizmos which help students see the effect of any change on the system in a real time manner*

	Unit Assessment	
For Learning: 1. Whiteboard work 2. Check for specific questions from homework 3. Participation in video conference	As Learning: 1. Self-Assessment using Google Forms	Of Learning: 1. Test

Required Resources
McGraw Hill Physics 12 textbook, *Youtube videos,* *Teacher's worksheets and notes* *Video conferencing* *Gizmos website* *Calculator*