04: Energy, Momentum and Torque

Content Area: **Science**
Course(s): **Honors Physics**
Time Period: **December**
Length: **1**
Status: **Published**

Enduring Understandings:

- Energy cannot be created or destroyed
- Impulse is the momentum added to an object
- Momentum cannons be created or destroyed.
- Momentum measures how hard it is to stop a moving object
- Power is how quickly energy has been added to an object
- Torque measures a Force's ability to create a rotation
- When Torques are equal the object will be in equilibrium
- Work in the energy that has been added to an object

Essential Questions:

- What are some of the things in the universe that are conserved?
- What are some ways we can make the study of motion simpler?

Lesson Titles:

- Conservation of Momentum
- Energy Conservation
- Momentum and Impulse
- Rotational Equilibrium
- Torque
- Types of Energy
- Work Energy and Power

Career Readiness, Life Literacies & Key Skills

WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

Inter-Disciplinary Connections:

LA.RH.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, qualitatively, as well as in words) in order to address a question or solve a problem.
LA.RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LA.RST.11-12.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
LA.WHST.11-12.1.A	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
LA.WHST.11-12.1.B	Develop claim(s) and counterclaims using sound reasoning and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
LA.WHST.11-12.1.C	Use transitions (e.g., words, phrases, clauses) to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
LA.WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.WHST.11-12.2.E	Provide a concluding paragraph or section that supports the argument presented.
LA.WHST.11-12.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

- Chromebook Activity
- Independent Studies
- Lectures on Work Energy and Power, Types of Energy, Energy Conservation , Momentum and Impulse, Conservation of Momentum, Torque, and Rotational Equilibrium
- Problem Solving
- Science Labs on Work Energy and Power, Types of Energy, Energy Conservation , Momentum and Impulse, Conservation of Momentum, Torque, and Rotational Equilibrium

Modifications

Formative Assessment:

- Anticipatory Set
- Closure
- Quizzes on Work Energy and Power, Types of Energy, Energy Conservation , Momentum and Impulse, Conservation of Momentum, Torque, and Rotational Equilibrium
- Warm-Up

Summative Assessment:

- Alternate Assessment
- Benchmark
- Marking Period Assessment
- Unit Test on Energy, Momentum and Torque

Alternative Assessments

Performance tasks
Project-based assignments
Problem-based assignments
Presentations
Reflective pieces
Concept maps
Case-based scenarios
Portfolios

Benchmark Assessments:

Skills-based assessment
Reading response
Writing prompt
Lab practical

Resources & Materials:

- https://sites.google.com/site/delseaphysics1/Home