

01: Newton's Laws & Motion

Content Area: **Special Education**

Course(s):

Time Period: **Full Year**

Length: **4 weeks**

Status: **Published**

General Overview, Course Description or Course Philosophy

Physical Science establishes a basic approach to the fundamentals of chemistry and physics. The following concepts will be explored: atomic structure, chemical bonding, chemical reactions, the periodic table, kinetic theory, and kinematics. The use of technology to gather and analyze data will be incorporated. This course is concept-oriented with a focus on Chemistry and Physics in the real world. Laboratory work and special projects will facilitate active learning and accommodate different learning styles.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Students will understand that:

- every object resists change to its state of motion mass is a measure of an object's inertia
- weight is a measure of the force of gravity acting on an object
- force causes acceleration, and an object cannot accelerate unless it is acted on by a net force
- acceleration is directly proportional to net force and inversely proportional to mass

CONTENT AREA STANDARDS

SCI.HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
SCI.HS-PS2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
LA.RST.9-10.1	Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
LA.WHST.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of

the subject under investigation.

LA.WHST.9-10.8

Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

LA.WHST.9-10.9

Draw evidence from informational texts to support analysis, reflection, and research.

Student Learning Targets

Refer to Declarative and Procedural Knowledge sections

Declarative Knowledge

Students will understand:

Procedural Knowledge

Students will be able to

EVIDENCE OF LEARNING

Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

Formative Assessments

Observation, do now, homework

Summative Assessments

- Benchmarks – departmental benchmark given at the end of MP1, MP2, and MP3
- Alternative Assessments

- Lab inquiries and investigations
- Lab Practicals
- Exploratory activities based on phenomenon
- Gallery walks of student work
- Creative Extension Projects
- Build a model of a proposed solution
- Let students design their own flashcards to test each other
- Keynote presentations made by students on a topic
- Portfolio

RESOURCES (Instructional, Supplemental, Intervention Materials)

physicsclassroom.com

Vernier.com/experiments

Khan Academy, Crash Course Physics, and Bozeman Science

INTERDISCIPLINARY CONNECTIONS

Algebra, English, Geometry

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.