

**Course: Science**  
**GRADE: 6**

Revised 9/11/07

## **PLANNED COURSE CURRICULUM GUIDE**

### **I. COURSE DESCRIPTION AND INTENT:**

The major goal of the sixth grade science program is to provide basic knowledge of: outer space, weather, sound and light, forces, motion and energy, and matter. Students will learn to discover and interpret scientific knowledge by completing projects, demonstrations and lab activities.



### **II. INSTRUCTIONAL TIME:**

**Class Periods: 90 (MS) 180 (SE)**

**Length of Class Periods (minutes): 70 (MS) 40 (SE)**

**Length of Course: Full year**

**Unit of Credit: N/A**

# PLANNED COURSE ADAPTATIONS/MODIFICATIONS

## Introduction

The instructional adaptations that follow are provided as suggestions to be implemented with all students, particularly with those in need of special education services including the gifted. This listing is in no way intended to be exhaustive. Rather, it is reflective of some major considerations in the area of curriculum adaptations/modifications.

These instructional adaptations will work with any student, but are especially beneficial to those in need of learning support. Some may argue that these modifications are simply *good teaching*. Indeed, modifications of this type do represent good teaching. These principles of good teaching become instructional modifications whenever: (1) certain students in a particular class require such modifications *above and beyond* what is typically required by *most* students in that class and (2) without these modifications, these same students would not succeed.

Assessment is an integral part of instruction reflecting student progress as well as achievement. Therefore, also included are suggestions for assessment modifications.

- Peer Support
- Cooperative learning among peers
- Modeling
- Development of Information Organizer
- Development of Graphic Organizer
- Development of structured study guides
- Student selection of instructional material (i.e., reading, writing, math)
- Taped lessons
- Copy notes (peer or teacher)
- Student conferencing
- Combine and vary modes of lesson presentation
- Adjust language level to match the developmental and intellectual levels of students
- Let student practice given examples first. Then assign tasks to be completed.
- Provide opportunity for guided and independent practice in a variety of situations
- Limit number and length of directions
- Have students repeat/review directions (i.e., peer to peer, student to teacher)
- Give feedback that is as immediate, specific, and objective as possible
- Clarify error responses so that students do not make the same errors over and over again
- Reinforce progress towards desired outcomes
- Breakdown complex tasks into smaller, more manageable units
- Use verbal prompts to elicit desired results
- Use manual guidance (i.e., hand over hand) to facilitate correct responses
- Computer assisted instruction
- Assessment based upon teacher observation of student performance (i.e., daily work, portfolio, artifacts, projects)
- Extended test time
- Test read to student by teacher or peer
- Oral testing (i.e., student retelling of information)
- Open book/note test
- Alternate testing (any demonstration of a student's understanding of concepts)
- Retesting
- Reduce the number of responses required on tests
- Use of curriculum based assessment
- Vary test format
- Objectively define mastery as related to each task. Tasks should be learned to mastery
- Reduce or remove distracting stimuli
- Use of concrete objects and manipulatives in all stages of instruction and assessment
- Emphasize important information
- Allow extra time to complete assignments/projects
- Limit the number of assigned tasks in the initial stages of learning. As the student's competency increases, expect the student to complete the same number of tasks as the rest of the class
- Use supplemental materials
- Alternate assignments accepted (i.e., modification to homework assignments)
- Flexible grouping/individual assistance
- Seating to accommodate needs
- Teacher proximity
- Use behavioral management techniques (i.e., contracts, time-out, token system, charts)

## PREFACE

Users and information seekers should familiarize themselves with the purpose and terminology of this **Planned Course Curriculum Guide (PCCG)**. We suggest that you first read the following:

- **PCCG PURPOSE AND INTENT**
- **PCCG DEFINITIONS**

The PCCG specifies the unit lesson outcome, essential content, standards, activities, resources, and evaluation of student performance. This sector provides the means to initiate the learning activities to attain the program goal as identified in the course description and intent.

The standards and outcomes are minimal expectations; further embellishment of the course is discretionary with the instructor depending upon the capability of the students.

This PCCG is designed as an ACTIVE document capable of technological modification as required.

The instructional delivery of this curriculum is quality controlled through the lesson plan development of the teacher.

## **PLANNED COURSE CURRICULUM GUIDE (PCCG) PURPOSE AND INTENT**

### **The Planned Course Curriculum Guide (PCCG) is a multi-purpose document:**

- All staff, particularly new teachers, can understand instructional expectations through the WRITTEN curriculum
- A continuing district-wide instructional process and scope and sequence of subject matter are enhanced. The WRITTEN curriculum is delivered through the TAUGHT curriculum [instructional content and learning activities] and is evaluated through the TESTED curriculum [expected levels of student achievement - learning outcomes]
- Priority student-centered outcomes are identified and attained through suggested learning activities and content designed to help insure a balanced and comprehensive basic curriculum
- Essential content and course standards provide an efficient basis for selecting appropriate instructional materials and resources
- Staff development areas for curriculum improvement are provided
- The PCCG conforms with current Pennsylvania Department of Education curriculum regulations and serves the dual feature of providing both an administrative document and an instructional guide
- Content and subject format remain flexible and adaptable to modification - an “active” document
- Special Pennsylvania Department of Education [PDE] legislation is identified
- Parents and students are provided with an overview of the instructional program and each course in particular

## PLANNED COURSE CURRICULUM GUIDE (PCCG) DEFINITIONS

- **Course Description and Intent:** a brief overview of the course and program goals
- **Instructional Time:** frequency of class meetings and time/appropriate credit at the secondary level
- **Special Notes:** emphatic features or highlights and identification of Department of Education mandates found in the course
- **Unit Lesson Outcome:** describes the knowledge, skills, attitudes, student performance behaviors and areas of study that have been identified as appropriate to help the student attain the rigorous standards of a quality education
- **Teaching-Learning Activities:** suggested activities designed to help all students achieve the learning outcomes and standards
- **Outcomes/Standards:** statements establishing the minimal knowledge, skills, performance behaviors, and essential learning (content) a student must attain
- **Expected Levels of Achievement (Learning Outcomes):** what students will be expected to do as a result of the application of teaching-learning activities and content
- **Evaluation Criteria (Actual Level of Attainment):** student performance level achieved and measured through specified evaluation criteria

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

**Subject Title:** Science

**Discipline/Grade Level:** 6

**UNIT LESSON OUTCOME:** 1

**Students will be able to explain past and present space exploration and the discoveries it has yielded.**

<b>RELATIONSHIP TO PA OUTCOMES/STANDARDS (Check Appropriate Graduation Outcomes)</b>																						
<b>Communications</b>	1.1	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	1.3	<input type="checkbox"/>	1.4	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.6	<input checked="" type="checkbox"/>	1.7	<input type="checkbox"/>	1.8	<input checked="" type="checkbox"/>						
<b>Mathematics</b>	2.1	<input type="checkbox"/>	2.2	<input type="checkbox"/>	2.3	<input type="checkbox"/>	2.4	<input type="checkbox"/>	2.5	<input type="checkbox"/>	2.6	<input type="checkbox"/>	2.7	<input type="checkbox"/>	2.8	<input type="checkbox"/>	2.9	<input type="checkbox"/>	2.10	<input type="checkbox"/>	2.11	<input type="checkbox"/>
<b>Science &amp; Technology</b>	3.1	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	3.3	<input type="checkbox"/>	3.4	<input checked="" type="checkbox"/>	3.5	<input type="checkbox"/>	3.6	<input type="checkbox"/>	3.7	<input checked="" type="checkbox"/>	3.8	<input checked="" type="checkbox"/>	3.9	<input type="checkbox"/>				
<b>Environment &amp; Ecology</b>	4.1	<input type="checkbox"/>	4.2	<input type="checkbox"/>	4.3	<input type="checkbox"/>	4.4	<input type="checkbox"/>	4.5	<input type="checkbox"/>	4.6	<input type="checkbox"/>	4.7	<input type="checkbox"/>	4.8	<input type="checkbox"/>	4.9	<input type="checkbox"/>				
<b>Civics &amp; Government</b>	5.1	<input type="checkbox"/>	5.2	<input type="checkbox"/>	5.3	<input type="checkbox"/>	5.4	<input type="checkbox"/>														
<b>Economics</b>	6.1	<input type="checkbox"/>	6.2	<input type="checkbox"/>	6.3	<input type="checkbox"/>	6.4	<input type="checkbox"/>	6.5	<input type="checkbox"/>												
<b>Geography</b>	7.1	<input type="checkbox"/>	7.2	<input type="checkbox"/>	7.3	<input type="checkbox"/>	7.4	<input type="checkbox"/>														
<b>History</b>	8.1	<input type="checkbox"/>	8.2	<input type="checkbox"/>	8.3	<input type="checkbox"/>	8.4	<input type="checkbox"/>														
<b>Arts &amp; Humanities</b>	9.1	<input type="checkbox"/>	9.2	<input type="checkbox"/>	9.3	<input type="checkbox"/>	9.4	<input type="checkbox"/>														
<b>Health, Safety &amp; PE</b>	10.1	<input type="checkbox"/>	10.2	<input type="checkbox"/>	10.3	<input type="checkbox"/>	10.4	<input type="checkbox"/>	10.5	<input type="checkbox"/>												
<b>Family &amp; Consumer Science</b>	11.1	<input type="checkbox"/>	11.2	<input type="checkbox"/>	11.3	<input type="checkbox"/>	11.4	<input type="checkbox"/>														
<b>Career Education &amp; Work</b>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>														

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

<b>ESSENTIAL CONTENT OUTCOMES/STANDARD</b>	<b>CONTENT &amp; INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES</b>  <i>(Individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful:</i>	<b>ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT</b>	<b>RESOURCES AND MATERIALS</b>
<p><b>STANDARD 1</b></p> <p>Who are the scientists who have contributed to early findings in astronomy?</p> <p>What types of equipment are used to explore space?</p> <p>How are star patterns identified?</p> <p>What is the sun?</p> <p>What are basic star types?</p> <p>How do the positions of the stars and constellations change in relation to the earth over time?</p> <p>What force keeps planets in their orbits?</p> <p>What are the parts of a comet?</p> <p>What is a space probe?</p> <p>How do satellites differ?</p> <p>How is the United States exploring the universe?</p> <p>Why do scientists conduct research in space?</p>	<p>Discuss past and present scientists that contributed to the field of astronomy</p> <p>Identify equipment and instruments used to explore space</p> <p>Explain how new information may change existing theories and practices</p> <p>Analyze types of stars</p> <p>Identify constellations as recognizable star patterns</p> <p>Characterize types of stars</p> <p>Explain why stars change position in the sky</p> <p>Compare planets' characteristics</p> <p>Identify planets as terrestrial and gas giants</p> <p>Explain the force of gravity</p> <p>Describe and differentiate comets, asteroids and meteors</p>	<p>Diagrams</p> <p>Observation</p> <p>Oral questioning</p> <p>Science lab activities</p> <p>Short answer</p> <p>Visual</p> <p>Essay</p> <p>Directed reading activity worksheets</p>	<p>Holt Astronomy text ISBN: 0-03-064796-7</p> <p>Worksheets</p> <p>Various measuring tools</p> <p>Diagrams</p> <p>Video</p> <p>Teacher resource book</p> <p>Posters</p>

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

	<p>Explain the differences between a meteor, meteoroid and meteorite</p> <p>Describe how space probe missions help to better understand the solar system</p> <p>Identify future possibilities of living and working in space</p> <p>Describe the benefits of the International Space Station</p>		
--	--	--	--

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

**Subject Title:** Science

**Discipline/Grade Level:** 6

**UNIT LESSON OUTCOME:** 2

Students will be able to identify and describe the major components that impact climate and weather.

<b>RELATIONSHIP TO PA OUTCOMES/STANDARDS (Check Appropriate Graduation Outcomes)</b>																						
Communications	1.1	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	1.3	<input type="checkbox"/>	1.4	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.6	<input checked="" type="checkbox"/>	1.7	<input type="checkbox"/>	1.8	<input type="checkbox"/>						
Mathematics	2.1	<input type="checkbox"/>	2.2	<input type="checkbox"/>	2.3	<input type="checkbox"/>	2.4	<input type="checkbox"/>	2.5	<input type="checkbox"/>	2.6	<input type="checkbox"/>	2.7	<input type="checkbox"/>	2.8	<input type="checkbox"/>	2.9	<input type="checkbox"/>	2.10	<input type="checkbox"/>	2.11	<input type="checkbox"/>
Science & Technology	3.1	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	3.3	<input type="checkbox"/>	3.4	<input type="checkbox"/>	3.5	<input checked="" type="checkbox"/>	3.6	<input type="checkbox"/>	3.7	<input checked="" type="checkbox"/>	3.8	<input type="checkbox"/>	3.9	<input type="checkbox"/>				
Environment & Ecology	4.1	<input type="checkbox"/>	4.2	<input type="checkbox"/>	4.3	<input type="checkbox"/>	4.4	<input type="checkbox"/>	4.5	<input type="checkbox"/>	4.6	<input type="checkbox"/>	4.7	<input type="checkbox"/>	4.8	<input type="checkbox"/>	4.9	<input type="checkbox"/>				
Civics & Government	5.1	<input type="checkbox"/>	5.2	<input type="checkbox"/>	5.3	<input type="checkbox"/>	5.4	<input type="checkbox"/>														
Economics	6.1	<input type="checkbox"/>	6.2	<input type="checkbox"/>	6.3	<input type="checkbox"/>	6.4	<input type="checkbox"/>	6.5	<input type="checkbox"/>												
Geography	7.1	<input type="checkbox"/>	7.2	<input type="checkbox"/>	7.3	<input type="checkbox"/>	7.4	<input type="checkbox"/>														
History	8.1	<input type="checkbox"/>	8.2	<input type="checkbox"/>	8.3	<input type="checkbox"/>	8.4	<input type="checkbox"/>														
Arts & Humanities	9.1	<input type="checkbox"/>	9.2	<input type="checkbox"/>	9.3	<input type="checkbox"/>	9.4	<input type="checkbox"/>														
Health, Safety & PE	10.1	<input type="checkbox"/>	10.2	<input type="checkbox"/>	10.3	<input type="checkbox"/>	10.4	<input type="checkbox"/>	10.5	<input type="checkbox"/>												
Family & Consumer Science	11.1	<input type="checkbox"/>	11.2	<input type="checkbox"/>	11.3	<input type="checkbox"/>	11.4	<input type="checkbox"/>														
Career Education & Work		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>														

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

<b>ESSENTIAL CONTENT OUTCOMES/STANDARD</b>	<b>CONTENT &amp; INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES</b>  <i>(Individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful:</i>	<b>ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT</b>	<b>RESOURCES AND MATERIALS</b>
<p><b>STANDARD 2</b></p> <p>What are the characteristics of the layers of the atmosphere?</p> <p>How does the movement of air bring about weather changes?</p> <p>What is the impact of the ocean on weather and climate?</p> <p>What does a barometer do?</p> <p>What tools do meteorologists use?</p> <p>What is the jet stream?</p> <p>How are clouds formed?</p> <p>What are the different types of precipitation?</p> <p>What is the water cycle?</p> <p>How available is water throughout the world?</p> <p>How do radiation, conduction and convection impact weather?</p> <p>What is the greenhouse effect?</p>	<p>Identify and describe the layers of the atmosphere</p> <p>Explain how pressure and temperature change given the altitude levels of the atmosphere</p> <p>Identify wind patterns, cold fronts and warm fronts</p> <p>Explain the ocean's impact on the climate of a region</p> <p>Compare the relationship of barometric changes and variations in weather</p> <p>Describe the tools meteorologists use to forecast the weather</p> <p>Name and explain the four main types of fronts and air masses</p> <p>Describe how weather is influenced by the jet stream</p> <p>Explain how clouds are formed</p> <p>Label a diagram of the water cycle</p>	<p>Diagrams</p> <p>Observation</p> <p>Science lab activities</p> <p>Visuals</p> <p>Oral questioning</p> <p>Oral report</p> <p>Short answer</p> <p>Projects</p> <p>Essay</p> <p>Direct reading activity worksheets</p> <p>Quizzes</p> <p>Tests</p>	<p>Unitedstreaming.com meteorology video clip</p> <p>Holt textbook – <u>Weather and Climate</u> ISBN: 0-03-064793-2</p> <p>Worksheets</p> <p>Diagrams</p> <p>Concept maps</p> <p>Posters</p> <p>Videos</p> <p>Discovery Channel Severe Weather video</p>

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

Discuss water sources available for use throughout the world

Characterize cloud types

Name the four main types of precipitation

Summarize the process of radiation, conduction and convection

Explain how the greenhouse effect could lead to global warming

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

**Subject Title:** Science

**Discipline/Grade Level:** 6

**UNIT LESSON OUTCOME:** 3

Students will be able to explain the properties of sound and light.

<b>RELATIONSHIP TO PA OUTCOMES/STANDARDS (Check Appropriate Graduation Outcomes)</b>																						
Communications	1.1	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	1.3	<input type="checkbox"/>	1.4	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.6	<input checked="" type="checkbox"/>	1.7	<input type="checkbox"/>	1.8	<input type="checkbox"/>						
Mathematics	2.1	<input type="checkbox"/>	2.2	<input type="checkbox"/>	2.3	<input type="checkbox"/>	2.4	<input type="checkbox"/>	2.5	<input type="checkbox"/>	2.6	<input type="checkbox"/>	2.7	<input type="checkbox"/>	2.8	<input type="checkbox"/>	2.9	<input type="checkbox"/>	2.10	<input type="checkbox"/>	2.11	<input type="checkbox"/>
Science & Technology	3.1	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	3.3	<input type="checkbox"/>	3.4	<input checked="" type="checkbox"/>	3.5	<input type="checkbox"/>	3.6	<input type="checkbox"/>	3.7	<input type="checkbox"/>	3.8	<input type="checkbox"/>	3.9	<input type="checkbox"/>				
Environment & Ecology	4.1	<input type="checkbox"/>	4.2	<input type="checkbox"/>	4.3	<input type="checkbox"/>	4.4	<input type="checkbox"/>	4.5	<input type="checkbox"/>	4.6	<input type="checkbox"/>	4.7	<input type="checkbox"/>	4.8	<input type="checkbox"/>	4.9	<input type="checkbox"/>				
Civics & Government	5.1	<input type="checkbox"/>	5.2	<input type="checkbox"/>	5.3	<input type="checkbox"/>	5.4	<input type="checkbox"/>														
Economics	6.1	<input type="checkbox"/>	6.2	<input type="checkbox"/>	6.3	<input type="checkbox"/>	6.4	<input type="checkbox"/>	6.5	<input type="checkbox"/>												
Geography	7.1	<input type="checkbox"/>	7.2	<input type="checkbox"/>	7.3	<input type="checkbox"/>	7.4	<input type="checkbox"/>														
History	8.1	<input type="checkbox"/>	8.2	<input type="checkbox"/>	8.3	<input type="checkbox"/>	8.4	<input type="checkbox"/>														
Arts & Humanities	9.1	<input type="checkbox"/>	9.2	<input type="checkbox"/>	9.3	<input type="checkbox"/>	9.4	<input type="checkbox"/>														
Health, Safety & PE	10.1	<input type="checkbox"/>	10.2	<input type="checkbox"/>	10.3	<input type="checkbox"/>	10.4	<input type="checkbox"/>	10.5	<input type="checkbox"/>												
Family & Consumer Science	11.1	<input type="checkbox"/>	11.2	<input type="checkbox"/>	11.3	<input type="checkbox"/>	11.4	<input type="checkbox"/>														
Career Education & Work	13.1	<input type="checkbox"/>	13.2	<input type="checkbox"/>	13.3	<input type="checkbox"/>	13.4	<input type="checkbox"/>														

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

<b>ESSENTIAL CONTENT OUTCOMES/STANDARD</b>	<b>CONTENT &amp; INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES</b>  <i>(Individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful:</i>	<b>ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT</b>	<b>RESOURCES AND MATERIALS</b>
<b>STANDARD 3</b>  What is sound?  What is a wave?  How does sound travel?  How does sound change in a moving object?  How does speed, size and frequency of sound waves affect sound?  What is the Doppler Effect?  How does light travel?  What is the electromagnetic spectrum?  How is color determined by reflection and absorption?  How are waves in the electromagnetic spectrum used in everyday life?  How can EM waves be harmful?  How is light refracted?	Describe how waves transfer energy but do not transfer matter  Distinguish between waves that need a medium and waves that do not  Draw and explain the difference between transverse and longitudinal waves  Explain how sound is caused by vibrations  Explain how frequency and pitch are related  Describe the Doppler Effect and give examples of it  Explain how amplitude and loudness are related  Explain how echoes are produced and stopped  Compare the speed of sound in different media	Diagrams  Essays  Observation  Oral questioning  Science lab activities  Short answer  Visuals  Quick labs  Directed reading activity worksheets  Quizzes  Tests	Holt textbook – <u>Sound and Light</u> ISBN: 0-03-064808-4  United Streaming video “Sound”  Worksheets  Demonstration materials  Teacher resource book  Set of lenses  Student built rockets  Doppler Effect sound clip  Posters  Diagrams

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

Describe types of light waves and their properties

Describe the difference between reflection and absorption

Identify examples of electromagnetic waves

Explain the range of the EM spectrum and identify uses for each

Explain waves that can be helpful and harmful

Evaluate how light will refract through a variety of lenses

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

**Subject Title:** Science

**Discipline/Grade Level:** 6

**UNIT LESSON OUTCOME:** 4

**Students will be able to explain the forces that affect the motion of an object.**

<b>RELATIONSHIP TO PA OUTCOMES/STANDARDS (Check Appropriate Graduation Outcomes)</b>																						
<b>Communications</b>	1.1	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	1.3	<input type="checkbox"/>	1.4	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.6	<input checked="" type="checkbox"/>	1.7	<input type="checkbox"/>	1.8	<input type="checkbox"/>						
<b>Mathematics</b>	2.1	<input type="checkbox"/>	2.2	<input type="checkbox"/>	2.3	<input type="checkbox"/>	2.4	<input type="checkbox"/>	2.5	<input type="checkbox"/>	2.6	<input type="checkbox"/>	2.7	<input type="checkbox"/>	2.8	<input type="checkbox"/>	2.9	<input type="checkbox"/>	2.10	<input type="checkbox"/>	2.11	<input type="checkbox"/>
<b>Science &amp; Technology</b>	3.1	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	3.3	<input type="checkbox"/>	3.4	<input checked="" type="checkbox"/>	3.5	<input type="checkbox"/>	3.6	<input checked="" type="checkbox"/>	3.7	<input type="checkbox"/>	3.8	<input type="checkbox"/>	3.9	<input type="checkbox"/>				
<b>Environment &amp; Ecology</b>	4.1	<input type="checkbox"/>	4.2	<input type="checkbox"/>	4.3	<input type="checkbox"/>	4.4	<input type="checkbox"/>	4.5	<input type="checkbox"/>	4.6	<input type="checkbox"/>	4.7	<input type="checkbox"/>	4.8	<input type="checkbox"/>	4.9	<input type="checkbox"/>				
<b>Civics &amp; Government</b>	5.1	<input type="checkbox"/>	5.2	<input type="checkbox"/>	5.3	<input type="checkbox"/>	5.4	<input type="checkbox"/>														
<b>Economics</b>	6.1	<input type="checkbox"/>	6.2	<input type="checkbox"/>	6.3	<input type="checkbox"/>	6.4	<input type="checkbox"/>	6.5	<input type="checkbox"/>												
<b>Geography</b>	7.1	<input type="checkbox"/>	7.2	<input type="checkbox"/>	7.3	<input type="checkbox"/>	7.4	<input type="checkbox"/>														
<b>History</b>	8.1	<input type="checkbox"/>	8.2	<input type="checkbox"/>	8.3	<input type="checkbox"/>	8.4	<input type="checkbox"/>														
<b>Arts &amp; Humanities</b>	9.1	<input type="checkbox"/>	9.2	<input type="checkbox"/>	9.3	<input type="checkbox"/>	9.4	<input type="checkbox"/>														
<b>Health, Safety &amp; PE</b>	10.1	<input type="checkbox"/>	10.2	<input type="checkbox"/>	10.3	<input type="checkbox"/>	10.4	<input type="checkbox"/>	10.5	<input type="checkbox"/>												
<b>Family &amp; Consumer Science</b>	11.1	<input type="checkbox"/>	11.2	<input type="checkbox"/>	11.3	<input type="checkbox"/>	11.4	<input type="checkbox"/>														
<b>Career Education &amp; Work</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																		

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

<b>ESSENTIAL CONTENT OUTCOMES/STANDARD</b>	<b>CONTENT &amp; INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES</b> <i>(Individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful:</i>	<b>ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT</b>	<b>RESOURCES AND MATERIALS</b>
<p><b>STANDARD 4</b></p> <p>What is force?</p> <p>How does force determine a reaction?</p> <p>What are Newton’s first three laws of motion?</p> <p>What is the motion of an object based on its position, direction and speed?</p> <p>How can force, speed and acceleration be calculated and predicted?</p>	<p>Identify forces including gravity</p> <p>Identify and give an example of Newton’s first three laws of motion</p> <p>Analyze factors that affect speed</p> <p>Calculate speed and acceleration</p> <p>Calculate force</p> <p>Analyze Newton’s law ‘s of motion</p> <p>Discuss acceleration at a constant rate</p> <p>Discuss momentum as a property of moving objects</p>	<p>Observation</p> <p>Oral questioning</p> <p>Science lab activities</p> <p>Directed reading activity worksheets</p> <p>Diagrams</p> <p>Short answer</p> <p>Visuals</p> <p>Quizzes</p> <p>Tests</p>	<p>Holt Science textbook: <u>Forces, Motion and Energy</u> ISBN: 0-03-064803-3</p> <p>Teacher resource book</p> <p>Handouts</p> <p>Video</p> <p>Posters</p>

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

**Subject Title:** Science

**Discipline/Grade Level:** 6

**UNIT LESSON OUTCOME:** 5

**Students will be able to describe the different types of matter and how their properties are measured.**

<b>RELATIONSHIP TO PA OUTCOMES/STANDARDS (Check Appropriate Graduation Outcomes)</b>																						
<b>Communications</b>	1.1	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	1.3	<input type="checkbox"/>	1.4	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.6	<input checked="" type="checkbox"/>	1.7	<input type="checkbox"/>	1.8	<input type="checkbox"/>						
<b>Mathematics</b>	2.1	<input type="checkbox"/>	2.2	<input type="checkbox"/>	2.3	<input type="checkbox"/>	2.4	<input type="checkbox"/>	2.5	<input type="checkbox"/>	2.6	<input type="checkbox"/>	2.7	<input type="checkbox"/>	2.8	<input type="checkbox"/>	2.9	<input type="checkbox"/>	2.10	<input type="checkbox"/>	2.11	<input type="checkbox"/>
<b>Science &amp; Technology</b>	3.1	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	3.3	<input type="checkbox"/>	3.4	<input checked="" type="checkbox"/>	3.5	<input type="checkbox"/>	3.6	<input type="checkbox"/>	3.7	<input checked="" type="checkbox"/>	3.8	<input type="checkbox"/>	3.9	<input type="checkbox"/>				
<b>Environment &amp; Ecology</b>	4.1	<input type="checkbox"/>	4.2	<input type="checkbox"/>	4.3	<input type="checkbox"/>	4.4	<input type="checkbox"/>	4.5	<input type="checkbox"/>	4.6	<input type="checkbox"/>	4.7	<input type="checkbox"/>	4.8	<input type="checkbox"/>	4.9	<input type="checkbox"/>				
<b>Civics &amp; Government</b>	5.1	<input type="checkbox"/>	5.2	<input type="checkbox"/>	5.3	<input type="checkbox"/>	5.4	<input type="checkbox"/>														
<b>Economics</b>	6.1	<input type="checkbox"/>	6.2	<input type="checkbox"/>	6.3	<input type="checkbox"/>	6.4	<input type="checkbox"/>	6.5	<input type="checkbox"/>												
<b>Geography</b>	7.1	<input type="checkbox"/>	7.2	<input type="checkbox"/>	7.3	<input type="checkbox"/>	7.4	<input type="checkbox"/>														
<b>History</b>	8.1	<input type="checkbox"/>	8.2	<input type="checkbox"/>	8.3	<input type="checkbox"/>	8.4	<input type="checkbox"/>														
<b>Arts &amp; Humanities</b>	9.1	<input type="checkbox"/>	9.2	<input type="checkbox"/>	9.3	<input type="checkbox"/>	9.4	<input type="checkbox"/>														
<b>Health, Safety &amp; PE</b>	10.1	<input type="checkbox"/>	10.2	<input type="checkbox"/>	10.3	<input type="checkbox"/>	10.4	<input type="checkbox"/>	10.5	<input type="checkbox"/>												
<b>Family &amp; Consumer Science</b>	11.1	<input type="checkbox"/>	11.2	<input type="checkbox"/>	11.3	<input type="checkbox"/>	11.4	<input type="checkbox"/>														
<b>Career Education &amp; Work</b>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>														

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

<b>ESSENTIAL CONTENT OUTCOMES/STANDARD</b>	<b>CONTENT &amp; INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES</b> <i>(Individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful:</i>	<b>ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT</b>	<b>RESOURCES AND MATERIALS</b>
<p><b>STANDARD 5</b></p> <p>What elements are the basic building blocks of matter that can not be broken chemically?</p> <p>What is an atom?</p> <p>How many elements are there?</p> <p>What is the periodic table?</p> <p>How are elements named?</p> <p>How are compounds distinguished from mixtures?</p> <p>What are the properties of matter and how are they tested?</p> <p>How are mass and weight measured and calculated?</p>	<p>Describe the characteristics of an element</p> <p>List ten elements from the periodic table</p> <p>Explain how elements are named</p> <p>List the properties of matter</p> <p>Calculate density using a formula</p> <p>Discuss chemical properties</p> <p>Discuss and use litmus paper</p> <p>Describe the difference between physical and chemical change</p> <p>Use graduated cylinders</p> <p>Calculate volume using formulas</p> <p>Differentiate between mass and weights</p>	<p>Lab report</p> <p>Observation</p> <p>Oral questioning</p> <p>Science lab activities</p> <p>Directed reading activity worksheets</p> <p>Visuals</p> <p>Quizzes</p> <p>Tests</p>	<p>Holt Textbook: <u>Introduction to Matter</u> ISBN: 0-03-064798-3</p> <p>Teacher resource book</p> <p>Handouts</p> <p>Posters</p>

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

**Subject Title:** Science

**Discipline/Grade Level:** 6

**UNIT LESSON OUTCOME:** 6

**Students will be able to describe energy conversions, measurements and conservation.**

<b>RELATIONSHIP TO PA OUTCOMES/STANDARDS (Check Appropriate Graduation Outcomes)</b>																						
<b>Communications</b>	1.1	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	1.3	<input type="checkbox"/>	1.4	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.6	<input checked="" type="checkbox"/>	1.7	<input type="checkbox"/>	1.8	<input type="checkbox"/>						
<b>Mathematics</b>	2.1	<input type="checkbox"/>	2.2	<input type="checkbox"/>	2.3	<input type="checkbox"/>	2.4	<input type="checkbox"/>	2.5	<input type="checkbox"/>	2.6	<input type="checkbox"/>	2.7	<input type="checkbox"/>	2.8	<input type="checkbox"/>	2.9	<input type="checkbox"/>	2.10	<input type="checkbox"/>	2.11	<input type="checkbox"/>
<b>Science &amp; Technology</b>	3.1	<input checked="" type="checkbox"/>	3.2	<input checked="" type="checkbox"/>	3.3	<input type="checkbox"/>	3.4	<input checked="" type="checkbox"/>	3.5	<input type="checkbox"/>	3.6	<input type="checkbox"/>	3.7	<input type="checkbox"/>	3.8	<input type="checkbox"/>	3.9	<input type="checkbox"/>				
<b>Environment &amp; Ecology</b>	4.1	<input type="checkbox"/>	4.2	<input type="checkbox"/>	4.3	<input type="checkbox"/>	4.4	<input type="checkbox"/>	4.5	<input type="checkbox"/>	4.6	<input type="checkbox"/>	4.7	<input type="checkbox"/>	4.8	<input type="checkbox"/>	4.9	<input type="checkbox"/>				
<b>Civics &amp; Government</b>	5.1	<input type="checkbox"/>	5.2	<input type="checkbox"/>	5.3	<input type="checkbox"/>	5.4	<input type="checkbox"/>														
<b>Economics</b>	6.1	<input type="checkbox"/>	6.2	<input type="checkbox"/>	6.3	<input type="checkbox"/>	6.4	<input type="checkbox"/>	6.5	<input type="checkbox"/>												
<b>Geography</b>	7.1	<input type="checkbox"/>	7.2	<input type="checkbox"/>	7.3	<input type="checkbox"/>	7.4	<input type="checkbox"/>														
<b>History</b>	8.1	<input type="checkbox"/>	8.2	<input type="checkbox"/>	8.3	<input type="checkbox"/>	8.4	<input type="checkbox"/>														
<b>Arts &amp; Humanities</b>	9.1	<input type="checkbox"/>	9.2	<input type="checkbox"/>	9.3	<input type="checkbox"/>	9.4	<input type="checkbox"/>														
<b>Health, Safety &amp; PE</b>	10.1	<input type="checkbox"/>	10.2	<input type="checkbox"/>	10.3	<input type="checkbox"/>	10.4	<input type="checkbox"/>	10.5	<input type="checkbox"/>												
<b>Family &amp; Consumer Science</b>	11.1	<input type="checkbox"/>	11.2	<input type="checkbox"/>	11.3	<input type="checkbox"/>	11.4	<input type="checkbox"/>														
<b>Career Education &amp; Work</b>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>														

## LEARNING OUTCOMES/STANDARDS AND CONTENT/ACTIVITIES

*Statements of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.*

<b>ESSENTIAL CONTENT OUTCOMES/STANDARD</b>	<b>CONTENT &amp; INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES</b>  <i>(Individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful:</i>	<b>ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT</b>	<b>RESOURCES AND MATERIALS</b>
<p><b>STANDARD 6</b></p> <p>What are the conversions of one energy form to another?</p> <p>How can energy be measured and calculated?</p> <p>Why is conservation of energy important?</p> <p>What is the difference between renewable and non-renewable resources?</p>	<p>Calculate kinetic energy using equation and calculator</p> <p>Determine gravitational potential energy</p> <p>Calculate mechanical energy</p> <p>Discuss forms of energy</p> <p>Discuss conservation of energy</p> <p>Compare and contrast renewable and non-renewable resources</p>	<p>Observation</p> <p>Oral questioning</p> <p>Directed reading activity worksheets</p> <p>Quizzes</p> <p>Tests</p>	<p>Holt Textbook: <u>Forces, Motion and Energy</u> ISBN: 0-03-064803-3</p> <p>Teacher resource book</p> <p>Handouts</p> <p>Posters</p>