# Charlotte County Curriculum Marine Science
# Course #2002500

## A Different Way of Thinking About Science Instruction
## *Next Generation Sunshine State Standards (NGSSS) for Science*

With the advent of the 2008 *Next Generation* Sunshine State Standards (NGSSS) for Science comes a new way of thinking about science education. There is a shift from "covering" the material to ***mastering*** the concepts. Grade level bands have been replaced with grade-specific benchmarks. Bodies of Knowledge (BOK) have replaced the clusters, and Big Ideas will thread between grade levels, gradually increasing in complexity and depth. ***To ensure the scientific literacy of our students, teachers must teach their grade level benchmarks in depth.***

☺ **Bodies of Knowledge:** Science concepts are divided into four general Bodies of Knowledge. These are Life Science (including Life and Environmental Science concepts), Earth and Space Science, Physical Science (includes Physical and Chemical Science), and Nature of Science (Scientific Thinking).

☺ **Big Ideas:** Eighteen Big Ideas thread throughout all grade levels and the benchmarks under them build in rigor and depth as students advance from K-12. Each grade level includes benchmarks from all four Bodies of Knowledge, but not every grade level will teach concepts from every Big Idea. Not all Big Ideas are taught at every grade level, which will allow teachers to explore specific grade-level concepts more in depth during the school year to ensure student mastery.

☺ **Benchmarks:** Each grade level has their own set of specific benchmarks that students must master. Kindergarten benchmarks are very different from Grade 1 benchmarks. In some Big Ideas, the concept is taught once in a grade level and not taught again for several years. As such, it is critical that students master each and every benchmark for their grade level. We can no longer depend on the next grade level to "catch them up."

☺ **Depth of Knowledge:** Each benchmark has been assigned a "Depth of Knowledge." The verbs used in the benchmark signify the depth to which the student is expected to master the concept. For example, if the verb on a benchmark is "observe," the students are expected to make observations about scientific phenomena. If the verb is "investigate," then students are expected to do an in-depth analysis for mastery of the concept. The important thing to keep in mind is that some benchmarks are intended to be taught more in-depth than others.

☺ **Best Practices:** While *what* is being taught at each grade level has changed, the instructional best practices remain the same. Visit the Department of Education Office of Math and Science website for all science standards and additional resources: http://www.fldoestem.org/center13.aspx .

☺ **Lesson plan links:** FDOE-STEM & CPALMS specific benchmarks for Marine Science: http://www.floridastandards.org/Courses/PublicPreviewCourse96.aspx?ct=1#

☺ **Students with Significant Cognitive Disabilities:** Refer to K-12 Science Standards for Access Points to be used with students with ***Significant Cognitive Disabilities***—these Access Points only apply to students who take the FCAT Alternate Assessment (less than 1% of CCPS population).

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## Next Generation Sunshine State Standards: SCIENCE

***Nature of Science is embedded throughout the entire school year at every grade level for every Body of Knowledge (BOK): Life, Earth, and Physical Sciences.***

**Nature of Science** is introduced at the beginning of the year and is to be taught throughout the year as it blends easily with teaching inquiry and is the basis of an activity/lab-based science classroom.
**Lab safety and the use of scientific tools** should be introduced at the beginning of the year and re-addressed continuously throughout the year. Each primary grade level should be teaching the science process skills and whole class science projects are an appropriate way to teach these skills.

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| **Standard 1: The Practice of Science** | |
| SC.912.N.1.1 | Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:<br>1. pose questions about the natural world,<br>2. conduct systematic observations,<br>3. examine books and other sources of information to see what is already known,<br>4. review what is known in light of empirical evidence,<br>5. plan investigations,<br>6. use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),<br>7. pose answers, explanations, or descriptions of events,<br>8. generate explanations that explicate or describe natural phenomena (inferences),<br>9. use appropriate evidence and reasoning to justify these explanations to others,<br>10. communicate results of scientific investigations, and<br>11. evaluate the merits of the explanations produced by others. |
| SC.912.N.1.3 | Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. |
| SC.912.N.1.4 | Identify sources of information and assess their reliability according to the strict standards of scientific investigation. |
| SC.912.N.1.6 | Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. |
| **Standard 2: The Characteristics of Scientific Knowledge** | |
| SC.912.N.2.1 | Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). |
| SC.912.N.2.2 | Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. |
| **Standard 3: The Role of Theories, Laws, Hypotheses, and Models** | |
| SC.912.N.3.1 | Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. |
| SC.912.N.3.4 | Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions. |

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| Standard 4: Science and Society | |
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| SC.912.N.4.1 | Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. |
| SC.912.N.4.2 | Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental. |

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| **Standard 6: Earth Structures** | |
| SC.912.E.6.3 | Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates. |
| SC.912.E.6.5 | Describe the geologic development of the present day oceans and identify commonly found features. |
| **STANDARD 7: Earth Systems and Patterns** | |
| SC.912.E.7.1 | Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon. |
| SC.912.E.7.4 | Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans. *(CCPS example: Global warming)* |
| SC.912.E.7.6 | Relate the formation of severe weather to the various physical factors. *(CCPS example: Global warming & hurricanes)* |
| SC.912.E.7.9 | Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water. *(CCPS example: Global warming)* |
| **Standard 14: Organization and Development of Living Organisms** | |
| SC.912.L.14.6 | Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health. *(CCPS example: aquaculture, HAB)* |
| **Standard 15: Diversity and Evolution of Living Organisms** | |
| SC.912.L.15.13 | Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. *(CCPS example: Limiting factors)* |

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| **Standard 17: Interdependence** | |
| SC.912.L.17.1 | Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution. *(CCPS example: Tragedy of Commons)* |
| SC.912.L.17.2 | Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature. *(CCPS example: Limiting factors)* |
| SC.912.L.17.3 | Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms. |
| SC.912.L.17.4 | Describe changes in ecosystems resulting from seasonal variations, climate change and succession. *(CCPS example: Global warming)* |
| SC.912.L.17.6 | Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism. *(CCPS example: work into chapter 5)* |
| SC.912.L.17.7 | Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems. *(CCPS example: work into reptiles and mammals)* |
| SC.912.L.17.8 | Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species. *(CCPS example: chapter 16)* |
| SC.912.L.17.9 | Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. *(CCPS example: chapter 4)* |
| SC.912.L.17.10 | Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle. *(CCPS example: chapter 6)* |
| SC.912.L.17.11 | Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests. *(CCPS example: chapter 15 and 17)* |
| SC.912.L.17.16 | Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution. *(CCPS example: chapter 16)* |
| **Standard 18: Matter and Energy Transformations** | |
| SC.912.L.18.12 | Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. *(CCPS example: chapter 6)* |
| **Standard 10: Energy** | |
| SC.912.P.10.2 | Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity. |
| SC.912.P.10.20 | Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another. *(CCPS example: chapter 6 – refractometer and Chapter 10)* |

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**Unit 1** ***Life on an Ocean Planet*** **-** Chapter 1 and Chapter 2

**Essential Questions**

1. How do technological problems affect the body of scientific knowledge?
2. How have changes in technology made it possible to expand marine science?
3. How do scientific discoveries change the value of available technology?

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**Unit 2** ***Life on an Ocean Planet*** **-** Chapter 6 and Chapter 7 (combine); Chapter 10; Chapter 11

**Essential Questions**

1. How do oceanic and atmospheric circulation patterns affect one another?
2. How do scientists explain the geological features on Earth's surface?
3. How are models used by scientists to explain the flow of energy through an ecosystem?
4. How do physical and chemical properties of water enable life to exist on Earth?

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**Unit 3** ***Life on an Ocean Planet*** **-** Chapter 4; Chapter 14; Chapter 15; Chapter 16; Chapter 17

**Essential Questions**

1. Why is it important that nature recycle materials? How does nature recycle materials?
2. How does human impact affect the health and diversity of an ecosystem?
3. How will loss of diversity in a system affect the health of the system (estuary)?
4. How and why are data collected and used by scientists to measure the health of an estuary?

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**Unit 4** ***Life on an Ocean Planet*** **-** Chapter 3; Chapter 5

**Essential Questions**

1. How do advances in biotechnology and genetics enable marine scientists to identify and reclassify marine organisms?
2. How do the unique physical and biological characteristics of organisms that make up the plankton, benthos and nekton enable them to survive in various ocean environments?
3. What are the principles that govern biochemical reactions (e.g. metabolism, osmoregulation) in marine organisms?

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| ASSESSMENT |
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| "Exploration and Evolution" Reading Grade 10 (AMSCO Publications) pp. 22-27<br><br>Trace the voyage of the HMS Challenger on a world map and list three modern technologies that would have made the exploration more efficient. Explain how these technological improvements impacted the discoveries made.<br><br>Follow a set of waypoints around the schoolyard using a compass and using GPS. Write your observations comparing the two technologies.<br><br>Explain how technology limited Charles Darwin's ability to support his theory of subsidence of volcanoes during formation of coral atolls.<br><br>Identify and describe how factors keep the mean air temperature over the state of Florida lower than the mean air temperatures over states such as Alabama and Mississippi.<br><br>Short Response Prompt: How do meteorologists explain the pattern that hurricanes take as they approach Florida?<br><br>Short Response Prompt: How does the theory of plate tectonics explain various geological features on the Earth's surface?<br><br>Short Response Prompt: Why can an ecosystem sustain much smaller populations of top level predators than lower trophic level organisms?<br><br>Short Response Prompt: Using the model of trophic levels within a community (trophic pyramid), explain what regulations limiting the harvest of top level predators are designed to accomplish.<br><br>Short Response Prompt: Explain how the shape of the water molecule affects its physical and chemical characteristics that allow life to exist on Earth.<br><br>Assessment: Compare and contrast endothermic and ectothermic metabolism in marine organisms.<br><br>SEX in the SEA –various reproductive strategies.<br><br>Analysis of Shark Attack Data and regulations governing shark harvest.<br><br>Dissections: Shark, Squid, Starfish, etc. |

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**ACTIVITIES (Teaching Resources)**

**Textbook:** ***Life on an Ocean Planet***

**For worksheets and activities, go to Virtual Office at https://10.39.253.1/vo**

Chapter 1
- Scientific Method - 1-28: How Scientists Solve Problems (45 min);
- Technology - 1-21: Technology Around You (45 min);
- Shifting Baselines - Preface: web site video (10 min) and talk to your parents on what the past was like: http://www.shiftingbaselines.org/index.php
  http://www.shiftingbaselines.org/news/videos/rja_full.htm
  http://www.shiftingbaselines.org/videos/tiny_fish60.htm
  http://www.sbflixcontest.org/indexWhatis.php
- Nature of Science - Intelligence on Trial Video; Science/Evolution/Creationism book (National Academies Press that explains Evolution, theory versus hypothesis, etc.; use topic of Hurricanes (month of August) to plot current storms; how hurricanes form virtual field trip; http://www.tramline.com/tours/sci/hurricane/_tourlaunch1.htm Hurricane Charley photos in ppt; Develop family Hurricane evacuation preparedness

Chapter 2
- Early Navigation - Stick/Shell Map in Life on an Ocean Planet (LOP) Activity 1
- Navigation charting - Plotting courses on navigational charts (See modifications by Yvonne not second part of GPS section);
- GPS Navigation - Scavenger Hunt around campus
- Mapping - World Map; plot the course of the significant sea travels; Polynesians; Magellan; Cook; Beagle; Challenger;
- Timeline - Butcher block paper construct timeline with illustrations and post in hallway;
- Include Marine Research of local importance (Bass Lab; Cape Haze Marine Lab; Mote Marine Lab; FWRI Charlotte Harbor Lab) Aquarius underwater lab
- Local History - Eugenie Clark video on local history with worksheet
- Technology Development - Extreme machines video featuring: 1Atm Suit; Trieste; Alvin; Bebee's bathysphere

Chapter 3
- Zones - Only do the zones and the environmental classification of organisms

Chapter 4
- Trophic Pyramid - Make a foldable pyramid; Personal pyramid modification Lab 5
- Food web - Draw a food web of who eats whom; include energy levels

Chapter 5
- Classification - Need for classification (Activity 1) using music as a modification
- Microscope Lab - Unicellular Algae on prepared slides
- Adaptations - Creatures of the mangroves video with worksheet (National Geographic video); Stellar Sea cow reading / activity;
- Invertebrates - Molluscs; Dichotomous Key (Web of Life); Shell Identification Lab; Worm;

crayfish; sea star virtual dissection
- Fish - Fish lifestyle activity (Fishing Lines) looking at adaptations and predict what the fish's lifestyle is; Shark dissection; Design-a-fish (paragraph on fish adaptations) 2-D or 3-D models; Mark and recapture Lab with skittles; Counter current activity with hard candy (gills; kidneys; muscle tissue);
- Shark Tagging – Use Mote tagging data
- Bony vs Cartilaginous - Marine Biology Coloring Book showing anatomical differences
- Sea Turtles - Satellite Tracking Data of tagged sea turtles on the web site; Sea Turtles for Teachers PowerPoint; http://www.cccturtle.org/satellitetracking.php ;
- Whales - Marine Coloring Book: baleen vs toothed whale; Dichotomous Key to identify different whales;

Chapter 6
- Chemistry - Properties of Water Lab 1 as modified in Word Document;
- Density - Salinity/Temperature/Density Lab
- Osmosis - Potato lab with different salinities compare before and after masses

Chapter 7
Sound waves - SONAR ocean depth calculations

Chapter 8 (Coriolis Effect and Winds) and Chapter 9 (Ocean Currents) - Integrated into Chapter 16 Global Warming and Hurricane unit

Chapter 10
- Tides - Tides Gizmos (ExploreLearning.com if available); Graphing of tides of different cities and determine the classification of tides
- Tsunamis - Lab 2 history; early warning; disaster planning

Chapter 11
- Plate Tectonics - http://www.earthweek.com/ Map volcanoes and earthquakes highlighting the plate boundaries; Lab 2 with modifications
- Sea Floor Mapping - Map sea floor and identify mid ocean ridges, continental shelves; leading and trailing edges of continental shelves 14-12 of active and passive margins; Ocean Profile; vertical profile of the Atlantic Transect; Using sand, make a model sea floor, then construct a profile and contour map
- Plate boundaries - Lab 4 page 5&6 as worksheet

Chapter 12 (Ocean Sediments) and Chapter 13 (Dynamic Coast) – omit

Chapter 14
- Estuaries – estuaries field trip
- Coral Reefs - FWRI resources CD's and Brochures
- Seagrasses - quadrat sampling; FWRI resources CD's and Brochures

Chapter 15
- Fisheries - Fisheries Mismanagement Lab 3 modified as worksheet; Diagram and describe

the 5 primary commercial fishing methods
- Shifting Baselines - Little fish video: www.shiftingbaselines.org

Chapter 16
- Global warming - Global warming research paper and debate
- Oil spill - Oil spill lab; Black tide video of Exxon Valdez oil spill; follow up on current status of the area with Internet Research.
- Exotic species - FGCU Exotic species DVD; Activity 2 Document invasive species introductions into US
- Oil drilling in Florida - Research project into the benefits and risks of drilling offshore of Florida, including political and economic aspects

Other Resources
- Video: Hidden Waters of Florida
- The EPA Grant Estuarine and Wetland Project
- Video: National Geographic "Creatures of the Mangroves"
- Video: Cousteau: Journey through the River of Grass
- Video: What's Your EQ?
- Video: By-catch

| **RELATED LANGUAGE ARTS & MATHEMATICS BENCHMARKS** | |
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| **Literary Analysis –**<br>**Standard:** Nonfiction - The student identifies, analyzes, and applies knowledge of the elements of a variety of nonfiction, informational, and expository texts to demonstrate an understanding of the information presented. | |
| LA.910.2.2.3 | The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, or outlining); |
| **Writing Applications –**<br>**Standard: Informative - The student develops and demonstrates technical writing that provides information related to real-world tasks.** | |
| LA.910.4.2.2 | The student will record information and ideas from primary and/or secondary sources accurately and coherently, noting the validity and reliability of these sources and attributing sources of information; |
| **Statistics –**<br>**Standard 1: Formulating Questions - Learn to define appropriate questions for research and to pose questions in a form that can be answered by collecting and analyzing data.** | |
| MA.912.S.1.2 | Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment. |
| **Statistics –**<br>**Standard 3: Summarizing Data (Descriptive Statistics): Students learn to work with summary measures of sets of data, including measures of the center, spread, and strength of relationship between variables. Students learn to distinguish between different types of data and to select the appropriate visual form to present different types of data.** | |
| MA.912.S.3.2 | Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following:<br>• bar graphs • line graphs<br>• stem and leaf plots • circle graphs<br>• histograms • box and whisker plots<br>• scatter plots • cumulative frequency (ogive) graphs |

# BEST PRACTICES IN SCIENCE – AN OVERVIEW

As Science teachers, we understand that learning is an ongoing process. Brain research tells us that the process works best when new knowledge is connected to prior knowledge by the teaching of meaningful lessons. Lessons related to personal experiences and taught in an emotionally safe environment allow for greater retention.

**Strategies to Incorporate into Science Lessons:**

- Relate what students already know to the new concepts.
- Encourage student curiosity by making time for their observations and questions. Relate them to what is being learned and use them to initiate investigation when possible.
- Guide learning. Ask probing questions to encourage student discussion and develop understanding. Gives students the chance to explain and defend their thoughts and conclusions.
- Build on prior understanding, identify and resolve existing misconceptions.
- Actively engage students in scientific processes and Inquiry.
- Provide opportunities for hands-on activities, and investigations that involve collecting and analyzing data.
- Use a variety of Science resources.
- Use books, periodicals, multimedia technology and up-to-date information.
- Emphasize the real-life relevance of Science.
- Relate Science to daily life and encourage students to bring their own experiences to Science.
- Involve students in sustained, in-depth projects rather than just "covering the textbook."
- Engage students in the "Big Ideas" of Science, which can be fully explored through integration of the Science strands in other content areas. Teach and revisit the benchmarks whenever it is a teachable moment throughout the year.
- Integrate subject matter to exemplify how the disciplines co-exist in actual practice.
- Science and other subject areas should be integrated to unify concepts and disciplines.
- Promote collaboration among students. Engage students in cooperative learning and small group projects to build understanding and retention.
- Engage students in measuring, collecting, manipulating, and using data. There are many opportunities to integrate math.
- Encourage students to communicate. Orally explaining what was learned makes it easier to write about it.
- Allow students to make oral presentations, have class discussions, and complete journals and data logs. "Teaching" others solidifies understanding and retention of content.
- Use meaningful assessments (performance tasks requiring short and extended responses).
- Focus on student understanding rather than on memorized definitions. Can they apply what they learned to another situation?

***According to the NSTA, 60% of science instructional time should be devoted to these activities. By using these strategies, our students will have positive experiences and become actively engaged in Inquiry, scientific processes, and problem solving.***

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## SCIENCE SAFETY FOR THE CLASSROOM AND SCIENCE TEACHERS

In order to ensure quality learning experiences for all students, safety must be a priority when setting up labs, activities and experiences for our students. You can promote safety during Science activities and labs by following these procedures:

- Conduct all Science activities yourself before doing them in the class and identify any steps or materials that might create safety hazards.
- Teach measurement and the tools of Science (BOK Nature of Science) at the beginning of the school year, and throughout the year.
- Find out if any students have allergies that might raise serious health concerns, such as allergies to latex or to plant or animal specimens. Be sure all students wear gloves or otherwise protect themselves when interacting with live specimens and chemicals.
- Do not allow students to perform Science activities without supervision.
- Make sure students are dressed appropriately for Science activities and that long hair, loose clothing, or jewelry do not cause safety concerns.
- If using hot plates or other heating equipment, make sure that they are not near flammable materials.
- Do not use mercury thermometers. Use safe liquid alloy or alcohol thermometers.
- Do not leave electrical devices or other machinery on when unattended.
- Chemicals
    - Explain how to correctly dispose of chemicals and other waste from Science activities (dilute with water before flushing down sink).
    - Maintain only a select group of chemicals and only in small quantities (a one-year supply is recommended).
    - Many simple substances, even cleaning supplies, are toxic. Keep these substances in a locked storage area.
    - Consult your MSDS sheets for proper use of chemicals. A resource for MSDS information is the *Flinn Scientific* website: http://www.flinnsci.com/search_MSDS.asp
    - Label your storage areas, storage containers, bottles, and jars. Chemicals should be identified by scientific name, formula, precautions for use, and antidote.

**Suggested Science Safety Rules for Students**

Have students make a Science safety poster illustrating the safety rules. Scientists know they must work safely when doing experiments. As a Science student, you need to be careful when doing Science activities, too. Follow these safety rules.

- Read the activity carefully before you start. Listen to the teacher's instructions. Ask questions about things you do not understand.
- Wear safety goggles and gloves when needed.
- Keep your work area neat and clean. Clean up spills right away.
- Never taste or smell substances unless directed to do so by your teachers.
- Handle sharp items, chemicals and other equipment carefully.
- Help keep plants and animals that you use safe.
- Tell your teacher if you have an accident or you see something that looks unsafe.
- Put materials away when you finish. Dispose of chemicals properly. Wash your hands well when you are finished.

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## High School Science Safety Agreement

Scientists know they must work safely when doing experiments. As a student scientist, your child needs to be careful when doing Science activities, too. Please review the following safety rules with your child and sign the safety agreement. Return the form as soon as possible so that your child can start experiencing the exciting hands-on activities we have planned this year.

- Safety apparel (goggles and aprons) will be worn for as long as you are in the lab when specified by the instructor.
- When Bunsen burners are being used by anyone in the lab, long hair will be tied back. Long hanging necklaces, heavy jewelry, and bulky jackets and sweaters should be removed. Keep Bunsen burners toward the middle of the lab tables. Use tongs and/or protective gloves to handle hot objects. Never reach across an open flame or burner.
- There will be no gum, no eating or drinking of any kind in the lab.
- Never taste chemicals/specimens or smell them directly. Avoid touching chemicals as much as possible.
- Activities will be done only as instructed with the specified amounts of materials.
- Proper procedures for handling all equipment and any additional safety precautions, which are discussed for specific labs, will be followed.
- Never leave an activity unattended unless instructed to do so.
- Horseplay or other inappropriate behavior will not be tolerated.
- Report all accidents to the teacher immediately, no matter how minor.
- Do not remove any materials or equipment from the lab without the teacher's permission.
- After completing an activity, all equipment should be put away and materials should be disposed of as directed. Remember, the sinks are not trashcans. Before leaving the room, each work area will be cleaned.

I agree to follow the Science safety rules.

_____

Student Signature

I have read and discussed this safety agreement with my child. I am aware that failure to follow these guidelines may result in a failing grade for the activity and/or disciplinary action. My child has the following needs that should be considered during some Science activities:

My child wears glasses: Yes No

My child is colorblind: Yes No

My child has allergies: Yes No

My child is allergic to:

_____

My child has (other):

_____

_____

Parent/Guardian Signature Date