



## Physical, Biological, and Earth Science

Georgia 4-H Project Achievement empowers young people with skills for a lifetime. Through a competitive process, students explore their interests, unleash their creativity, share their work, and celebrate their achievements! This guide provides 9th—12th graders with examples for getting started with their project exploration.

### Description of Project:

4-H'ers may explore the study of chemistry, physics, living organisms, or the earth. Through this project 4-H'ers may:

- acquire knowledge about the scientific aspects of topics dealing with non-living matter or energy, such as physics, chemistry, and/or astronomy
- gain an understanding of the origins, history, characteristics, habitats, and systems of plants and animals
- study earth and space processes, including geology, astronomy, meteorology, oceanography, and/or paleontology
- learn the processes of scientific inquiry to determine the nature of things
- explore career opportunities in the areas of science and scientific inquiry

### Overview:

- ⇒ Choose project
- ⇒ Develop skills in:
  - Project
  - Leadership
  - Service
- ⇒ Prepare portfolio for work completed from January 1—December 31
- ⇒ Prepare presentation
- ⇒ Practice
- ⇒ Compete
- ⇒ Reflect

### Examples of Project Development Experiences:

- Shadow a Department of Natural Resources (DNR) officer, geologist, or other scientist to learn about their job
- Tour an astronomy tower, planetarium, aquarium, and/or natural history museum
- Conduct an informational interview with a scientist, teacher, or other professional to learn about their work and career path
- Visit your local county Extension office and discover the process of soil sampling
- Tour local industries to discover how science is used in manufacturing processes
- Schedule a visit to a 4-H Center and participate in a 4-H Environmental Education program

## Project Sharing and Helping Examples:

- Start a club that focuses on the environment, gardening, and/or science
- Volunteer as a teen leader on 4-H National Youth Science Day
- Conduct science experiments or demonstrations with 4-H'ers
- Teach a class about circuits
- Learn about disaster relief, extreme weather, and climate changes in your area. Help your family and neighbors become better prepared for these situations
- Learn about astronomy and constellations. Host a nighttime viewing party with friends, neighbors, and family to teach them what you've learned
- Trace the production of a material such as glass, plastic, or metal. Prepare and display an informational poster about the chemicals and natural resources used in the production
- Prepare an exhibit to teach others about the science behind satellites, fiber optics, and radio transmissions involved in distance learning
- Volunteer at a school's science night
- Assist younger students with their science projects
- Serve your community as a 4-H STEM Ambassador

## Recommended Resources:

- [Georgia4h.org/ProjectAchievement](http://Georgia4h.org/ProjectAchievement)
- [georgia4h.org/set](http://georgia4h.org/set)
- [naturalhistory.uga.edu](http://naturalhistory.uga.edu)
- [4-h.org/parents/stem-agriculture](http://4-h.org/parents/stem-agriculture)
- [4-h.org/parents/national-youth-science-day](http://4-h.org/parents/national-youth-science-day)
- [georgia4h.org/public/edops/ambassadors](http://georgia4h.org/public/edops/ambassadors)
- [agroclimate.org](http://agroclimate.org)
- [epa.gov/students](http://epa.gov/students)
- [usgs.gov](http://usgs.gov)

## Special Considerations:

- Youth should talk with their science teacher about appropriate safety measures prior to conducting or leading experiments.
- Youth should practice internet safety when communicating with new people online.
- Remember to ask permission before photographing, taping, or quoting someone for your project.
- Food should not be prepared as part of the Physical, Biological, and Earth Science Project Achievement competition presentation.
- Live animals and weapons are not permitted.

## At Competition:

*Physical, Biological, and Earth Science projects may use posters, artifacts, biofacts, and/or technology to support their presentation. The time limit for these presentations is 12 minutes. Computers, projectors, screens, and other technological devices may be used.*

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Sources:

The University of Georgia CAES. 2016. Project Achievement. <http://www.georgia4h.org/projectachievement/>

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