

4-H Physical Sciences



18 U.S.C. 707

SNAPSHOT 4H1639

CURRICULA & RESOURCES

Michigan 4-H Curricula

- » 4-H Science Blast in the Class! Teacher's Guide: http://4h.msue.msu.edu/resources/4h_science_blast_in_class

National 4-H Curricula

Aerospace

- » Aerospace Adventures 1 - Pre-Flight (06842)
- » Aerospace Adventures 2 - Lift Off (06843)
- » Aerospace Adventures 3 - Reaching New Heights (06844)
- » Aerospace Adventures 4 - Pilot in Command (06845)
- » Flight Crew Helper's Guide (06846)

Computers

- » CPU 1: Inside the Box (08347)
- » CPU 2: Peer to Peer (08348)
- » CPU 3: Teens Teaching Tech (08349)
- » Newbie Know How - CPU Supplement (08346)

Electricity

- » Electric Excitement 1 - Magic of Electricity (06848)
- » Electric Excitement 2 - Investigating Electricity (06849)
- » Electric Excitement 3 - Wired for Power (06850)
- » Electric Excitement 4 - Entering Electronics (06851)
- » Electricity Excitement - Helper's Guide

General Science

- » Science Discovery Series 1 - (07914)
- » Science Discovery Series 2 - (07915)

Geospatial

- » Exploring Spaces Going Places (08358)

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WHAT'S IT ALL ABOUT?

Physical science is the study of natural laws that relate to nonliving bodies. Specific examples of study include chemistry, physics, astronomy and geology. Learn about objects and materials: their properties, position and motion. Explore light, heat, electricity and magnetism. Investigate energy, atoms, matter and chemical reactions. Discover how these relate to other 4-H projects such as foods, electricity, sports, rocketry or robotics.

- » Practice the scientific investigation process; discover science through questions.
- » Learn about different properties of substances.
- » Explore motions, forces and energy.
- » Study the earth and space.
- » Investigate atoms, molecules, compounds and elements.
- » Discover the history of the earth and the solar system.
- » Explore different career options within the physical sciences.

THE BIG PICTURE

Starting Out:

- » Learn the steps in the scientific process.
- » Identify a liquid, a solid and a gas.
- » Explore the concept of friction by doing an experiment.
- » Discover the importance of the earth's magnetic field by using a compass.
- » Investigate rocks and soil by collecting samples or observing in different areas.
- » Explore different elements by collecting some common items found in the home.
- » Learn the planets within the solar system.
- » Distinguish between the moon, asteroids and comets.
- » Observe and record information about the daily weather.
- » Visit a planetarium.

Learning More:

- » Investigate the scientific process through involvement in a physical science fair project.
- » Experiment with liquids, solids and gases by creating putty or goop.
- » Determine the physical properties of water in various states.
- » Determine whether common substances in your kitchen are elements, mixtures or compounds.
- » Design an experiment to test one of the laws of physics and record results.
- » Create a graph by recording the temperatures of local lakes and rivers during various times of the year.
- » Observe constellations in the night sky.

Expanding Horizons:

- » Use the scientific process to explore a physical science problem; record and present your findings.
- » Explore whether pieces of wood will sink or float based on their mass, volume and density.
- » Analyze the properties of a specific herbicide or other chemical and determine whether it is a risk or benefit to humans.
- » Compare how energy is conserved in the human body versus in a power plant.
- » Create a topographical map for an existing site within your community, and describe how the land features were formed.
- » Study wind and describe how it affects weather.
- » Job shadow or interview physical science professionals in the field.



FOCUS ON PHYSICAL SCIENCES

Science

- » Create an electrical circuit using safe procedures.
- » Experiment with conductivity of various materials.
- » Design and create a robot.
- » Design and build your own wind speed tool to explore weather.

Citizenship & Leadership

- » Work with other young people to create a solution to a physical science issue that concerns the local community, and present your ideas to local government.
- » Prepare a presentation or learning activity on a physical science topic and present it to another youth group or classroom studying this topic.

Communication

- » Present a physical science experiment to another youth group or organization.
- » Prepare a presentation for younger children as to why seasons occur on earth.
- » Present a physical science fair project to another youth group.

Life Skills

- » Use critical-thinking, problem-solving and decision-making skills to help you make good decisions about project management.
- » Keep records on your project expenses and income.
- » Practice personal resiliency through successes and challenges in your project.



Curricula & Resources, Continued

Robotics

- » Junk Drawer Robotics Level 1 – Give Robots a Hand (08431)
- » Junk Drawer Level 2 – Robots on the Move (08432)
- » Junk Drawer Level 3 – Mechatronics (08433)
- » Robotics Platforms Track DVD (08434)
- » Junk Drawer Robotics – Youth Robotics Notebook (08435)
- » Virtual Robotics Track DVD (08430)

Small Engines

- » Small Engines 1 – Crank It Up (08186)
- » Small Engines 2 – Warm It Up (08187)
- » Small Engines 3 – Tune It Up (08188)
- » Small Engines Group Helper's Guide (08189)

Wind Energy

- » The Power of the Wind Facilitator Guide (08384)
- » The Power of the Wind Youth Guide (08383)

Other Resources

- » Abrams Planetarium: <http://www.pa.msu.edu/abrams/>
- » Colorado State University Extension: Chemistry in the Kitchen <http://www.colorado4h.org/stem/connections/stem-connections-chemistry-kitchen.pdf>
- » Colorado State University Extension: K-12 School Enrichment/After School Program Activity Sheets http://www.colorado4h.org/k12/activity_sheets/activity.php
- » Purdue University Extension: Geology Helper's Guide <http://www.extension.purdue.edu/extmedia/4H/4-H-988-W.pdf>
- » Science Buddies: Science and Sports <http://www.sciencebuddies.org/science-fair-projects/Intro-Sports-Science.shtml>
- » Science Kids – Fun Science and Technology for Kids! <http://www.sciencekids.co.nz/projects.html>

HOW CAN YOU GET INVOLVED?

- » Contact your local Michigan State University (MSU) Extension office for workshops, activities and events.
- » If you are interested in a college education in physical sciences, visit MSU's website at www.msu.edu to explore those majors.

Adapted with permission from The Iowa 4-H Hot Sheets by Iowa State University Extension, 2011, Iowa 4-H Project Hot Sheet. Retrieved from <http://www.extension.iastate.edu/4h/projects/>

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