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.

Using 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.

Continued page 2
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.

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.

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.

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: K-12 School Enrichment/After School Program Activity Sheets http://www.colorado4h.org/k12/activity_sheets/activity.php

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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