

Furman University

In cooperation with Roper Mountain Science Center
and Greenville County Schools

EDU _____ (to be assigned by Furman)

Course for Grade 3 Physical Science 2016 Science P.L.U.S. Institute

EDU _____ : Course (2 hours non-degree graduate credit)

Instructors: *Stacey Merritt & Nancy Banning*

Available in classroom one half hour before and after class.
Science P.L.U.S. Institute office phone: (864) 355-8916
Science P.L.U.S. Institute office FAX: (864) 355-8951
Science P.L.U.S. Institute office E-mail: astjohn@greenville.k12.sc.us

Academic Term and Year: Summer 2017 **Dates:** July 17-21, 2017

Location: Roper Mountain Science Center

Academic Course Description:

Hands-on, inquiry-based activities emphasizing science process skills will provide the vehicles for studying concepts that correlate to the South Carolina Science Academic Standards for third grade physical science. Course topics are designed to enhance the teacher's physical science knowledge base and provide appropriate lessons for the 3rd grade science classroom. Activities are aimed at developing awareness in students of the properties and changes of matter and the transfer of energy through electricity and magnetism. Participants receive a significant quantity of science materials for performing the activities in their classrooms.

Course Goals/Objectives:

- Investigate strategies for integrating the hands-on, inquiry-based approach of science instruction into the elementary classroom.
- Deepen his/her understanding of physical science concepts and their applications to our world.
- Demonstrate understanding of the states of matter and how substances change from one state to another through class activities, projects, and demonstrations.
- Examine sources of heat and perform activities that demonstrate the transfer of heat.
- Develop an understanding of how electricity transfers energy and how various materials affect it
- Explore magnetism and construct an electromagnet.
- Demonstrate the correct use of grade-appropriate tools and devices in conducting scientific investigations.

Prerequisites: No course prerequisites; participants must teach science in a South Carolina public school, grade 3 (or equivalent instructions level special education).

Resources Required: None. All materials will be furnished by the Science P.L.U.S. Institute.

Related Sources Used for Supplementary Reading: All supplementary materials will be furnished by the Institute.

Attendance Policy and Assignments:

The Science P.L.U.S. Institute is an intensive, week-long, hands-on class for South Carolina science teachers. Each of the different course offerings for the summer of 2017 is based on the appropriate South Carolina Science Academic Standards for a specific school grade, ranging from three through eight. Participants are expected to attend all class sessions, participate fully in class activities, and complete all assignments or assessments. Emergency exceptions will be handled on an individual basis.

Evaluation Procedures and Standards:

GRADING SCALE:

90-100	A
80-89	B
70-79	C
60-69	D
59 OR BELOW	F

List Requirements to Determine Grade

1. Attendance at all sessions
2. Active class participation
3. Completion of all lab and activity written assignments
4. Daily assessments
5. End-of-session assessment

Any student with a documented disability needing academic accommodations should contact the Science P.L.U.S. Office at 864-355-8916 prior to arriving at the institute. All discussions will remain confidential.

Outline of Course Content:

	Topics	Activities or Assignments	Correlation to SC Science Academic Standards
Monday	Properties of Matter	<ul style="list-style-type: none"> • Course Introduction • Pre-Assessment • What’s My Rule? • GEMS: Matter • GEMS: Liquid Explorations 	<p>3.P.2A.1 Analyze and interpret data from observations and measurements to describe and compare the physical properties of matter (including length, mass, temperature, and volume of liquids).</p> <p>3.P.2A.2 Construct explanations using observations and measurements to describe how matter can be classified as a solid, liquid or gas.</p>
Tuesday	Sources of Heat	<ul style="list-style-type: none"> • Construct Piezo Poppers • Homemade Fire Extinguisher • Heat conduction blocks • Burning Water Balloons • Burning Money • Ball and hoop • Design Challenge: Cooler • Exploration of dry ice and liquid nitrogen 	<p>3.P.2A.3 Plan and conduct scientific investigations to determine how changes in heat (increase or decrease) change matter from one state to another (including melting, freezing, condensing, boiling, and evaporating).</p> <p>3.P.2A.4 Obtain and communicate information to compare how different processes (including burning, friction, and electricity) serve as sources of heat energy.</p> <p>3.P.2A.5 Define problems related to heat transfer and design devices or solutions that facilitate (conductor) or inhibit (insulator) the transfer of heat.</p>
Wednesday	Electricity	<ul style="list-style-type: none"> • AIMS: Electrical Connections • Modeling electrons • Deconstructing Circuits • Discovering Conductors • Exploring Magnets • Snap Circuits / Simple Circuits • Experimental set-up: conductivity testing 	<p>3.P.3A.1 Obtain and communicate information to develop models showing how electrical energy can be transformed into other forms of energy (including motion, sound, heat, or light).</p> <p>3.P.3A.2 Develop and use models to describe the path of an electric current in a complete simple circuit as it accomplishes a task (such as lighting a bulb or making a sound).</p> <p>3.P.3A.3 Analyze and interpret data from observations and investigations to classify different materials as either an insulator or conductor of electricity.</p>
Thursday	Magnetism	<ul style="list-style-type: none"> • AIMS: Mostly Magnets • Neo Magnets • Design Challenge: Electromagnet 	<p>3.P.3B.1 Develop and use models to describe and compare the properties of magnets and electromagnets (including polarity, attraction, repulsion, and strength).</p> <p>3.P.3B.2 Plan and conduct scientific investigations to determine the factors that affect the strength of an electromagnet.</p>
Friday	Share-a-Thon Final Assessment	<ul style="list-style-type: none"> • Science Practice Collaboration • Wrap Up & Review of standards presented during the week • Final Assessment 	Review of all

Daily Activities:

- Notebooking
- Process Skills
- Design Challenges

Standard 3.S.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.