

**SPRINGFIELD PUBLIC SCHOOLS
Phelps Center for the Gifted
WINGS Program
(523-3315)**

**WINGS Major Instructional Goals
To develop the student's thinking skills
To develop the student's communication skills
To develop the student's understanding of self and others**

**UNIT SYLLABUS
Young Einsteins
Fall 2019**

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I. Overall Concept of the Course

Investigating, questioning, and testing our environment and its phenomena will be the focus of this course. The course will allow students to discover the mysteries of science in a hands-on format involving scientific processes. Students will observe demonstrations, conduct experiments, develop and test hypotheses, document results on lab sheets, research and discuss current scientific topics.

II. Rationale

Young Einsteins is a course of study designed for gifted 3rd and 4th grade students to meet the following needs:

- their need for access to challenging curriculum (limited science experience in the elementary classroom)
- their need for sophistication of ideas (advanced vocabulary and content)
- their need to explore content not usually available in the regular classroom (increased level of difficulty)
- their need to develop higher level thinking skills (hypothesizing,

predicting, synthesizing)

- their need to share ideas, using advanced technologies (cooperative learning techniques to share information)
- their need to solve problems in diverse ways (access to a variety of science concepts and materials for experimentation through a hands-on experience)

III. Course Objectives

Each student will be expected to successfully complete the following unit objectives:

- apply the skills of observation by conducting scientific experiments
- analyze conclusions with support of data by examining scientific experiments
- apply steps of the Scientific Method by practicing laboratory experiments
- apply cooperative learning skills by working in small groups and sharing information
- analyze, interpret, evaluate, synthesize and communicate ethical and historical issues from research by writing, public speaking or creating a visual project

IV. Topics of Study

Scientific Processes in conjunction with:

Chemistry
Light and Color
Sound
Forensics
Water

V. Teaching Techniques and Student Activities

Variety of Teaching Techniques include:

Guest Speakers

Demonstrations
Team Building
Socratic Questioning
Large and Small Group Instruction
Critical Thinking

Student Activities:

Small group (team) hands-on experiments and research
Reporting and Recording Data
Problem Solving
Research through books, computers and periodicals
Deductive Reasoning
Simulation
Field Trips

VI. Student Responsibilities

1. Abide by WINGS GUIDELINES which include:
 - *Be respectful of individuals and property.
 - *Be courteous and kind.
 - *Be cooperative with others.
 - *Practice safety.
2. Complete all assignments.
3. Keep lab book current.
4. Participate and cooperate.
5. Attend class each week.

VII. Parent Responsibilities

1. See that your student attends class each week.
2. Take student to the library for research, if needed.

VIII. Assessment

The student will participate in a pretest and post-test of basic scientific principles. The student will recognize and apply the steps of the Scientific Method. The teacher will observe the development of the scientific process skills of observation, prediction and conclusion. The student will complete a lab book as a record of data from various experiments throughout the class.

IX. Resources To Be Used

Books:

Kenda, Margaret and Phyllis Williams. Barron's Science Wizardry for Kids. Hauppauge, NY, 1992.

Oxlade and Stockley. The World of the Microscope. London: Usborne Publishing Ltd., 1989.

Van Cleave, Janice. 200 Goopy, Slippery, Slimy, Weird and Fun Experiments, New York: John Wiley and Sons, Inc., 1993.

Van Cleave, Janice. 204 Sticky, Gloppy, Wacky, and Wonderful Experiments. New York: John Wiley and Sons, Inc., 2002.

Van Cleave, Janice. 201 Awesome, Magical, Bizarre and Incredible Experiments. New York: John Wiley and Sons, Inc., 1994.

Van Cleave, Janice. 203 Icy, Freezing, Frosty, Cool, and Wild Experiments. New York: John Wiley and Sons, Inc., 1999.

Van Cleave, Janice. 202 Oozing, Bubbling, Dripping, and Bouncing Experiments. New York: John Wiley and Sons, Inc., 1996.

Zero to Einstein in 60. Greensboro, NC: Wild Goose Company, 1999.

Kellerman, Elizabeth. Discover! Simple Chemistry. St. Louis: Milliken Pub. Co., 1999.

Abby, Theodore S. Elements and the Periodic Table (What Things Are Made Of). Mark Twain Media/Carson-Dellosa Pub. Co., Inc., 2001.

Raham, Gary. Science Tutor: Chemistry. Mark Twain Media/Carson-Dellosa Pub. Co., Inc., 2005.

Barron's Essential Atlas of Physics and Chemistry. Hauppauge, NY: Barron's Educational Series, Inc., 2004.

Porter and Davies, ed. Discoveries: How Things Work. New York: Barnes and Noble, Inc., 2005.

Graham, Taylor, Farndon, and Oxdale (2002) Science Encyclopedia. New York: Miles Kelly Publishing Ltd. 2002.

Hakim, Joy. The Story of Science: Aristotle Leads the Way. Washington: Smithsonian Books, 2004.

Hankin, Rosie, ed. Complete Handbook: Rocks, Crystals, Minerals. New York: Barnes And Noble, Inc. 2004.

Van Cleave, Janice. Rocks and Minerals: Mind Boggling Experiments You Can Turn Into Science Fair Projects. New York: John Wiley and Sons, Inc., 1996.

Brandolini, Anita. Fizz, Bubble & Flash: Element Explorations & Atom Adventures for Hands-On Science Fun! Williamson Publishing, Inc., 2003.

Videos: Bill Nye Videos (Atoms, Bubbleology, Chemical Reactions)

Discovery – Inventions: Elements and Compounds

Forensics Video

Guest Speakers: (MSU Chemistry Professors)