

## Science Content Standards:

*The Science on Patrol program builds its scientific content based on the standards of the National Committee on Science Education Standards and Assessment, National Research Council. The content in the Science on Patrol Lesson plans utilize the national standards for science education for grades 5-12.*

The following is a list of the standards that are addressed in the curriculum.

### Science as Inquiry

#### CONTENT STANDARD A:

#### All students should develop:

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

*Students in grades 5-8 can begin to recognize the relationship between explanation and evidence.*

- Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models.
- Current scientific knowledge and understanding guide scientific investigations. Different scientific domains employ different methods, core theories, and standards to advance scientific knowledge and understanding.
- Mathematics is important in all aspects of scientific inquiry.
- Technology used to gather data enhances accuracy and allows scientists to analyze and quantify results of investigations.
- Scientific explanations emphasize evidence, have logically consistent arguments, and use scientific principles, models, and theories. The scientific community accepts and uses such explanations until displaced by better scientific ones. When such displacement occurs, science advances.
- Science advances through legitimate skepticism. Asking questions and querying other scientists' explanations is part of scientific inquiry. Scientists evaluate the explanations proposed by other scientists by examining evidence, comparing evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations.
- Scientific investigations sometimes result in new ideas and phenomena for study, generate new methods or procedures for an investigation, or develop new

technologies to improve the collection of data. All of these results can lead to new investigations.

*The SOP program provides participants opportunities to explore the scientific method to use current scientific knowledge and deductive reasoning to come to logical conclusions.*

## **Physical Science**

### **CONTENT STANDARD B:**

**All students should develop an understanding of**

- Properties and changes of properties in matter
- Motions and forces
- Transfer of energy

*The SOP curriculum includes activities that involve the structure of matter. Trajectory of motion and energy.*

## **Life Science**

### **CONTENT STANDARD C:**

**All students should develop understanding of**

- Structure and function in living systems
- Reproduction and heredity
- Regulation and behavior
- Populations and ecosystems
- Diversity and adaptations of organisms
- Cells carry on the many functions needed to sustain life. They grow and divide, thereby producing more cells. This requires that they take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs.
- Specialized cells perform specialized functions in multicellular organisms. Groups of specialized cells cooperate to form a tissue, such as a muscle. Different tissues are in turn grouped together to form larger functional units, called organs. Each type of cell, tissue, and organ has a distinct structure and set of functions that serve the organism as a whole.

*The SOP curriculum has lessons on blood typing and DNA which are gateway subjects to the field of life science.*

# Science and Technology

## **CONTENT STANDARD E: all students should develop**

- Abilities of technological design
- Understandings about science and technology

*In the middle-school years, students' work with scientific investigations can be complemented by activities that are meant to meet a human need, solve a human problem, or develop a product...*

### **IDENTIFY APPROPRIATE PROBLEMS FOR TECHNOLOGICAL DESIGN.**

Students should develop their abilities by identifying a specified need, considering its various aspects, and talking to different potential users or beneficiaries. They should appreciate that for some needs, the cultural backgrounds and beliefs of different groups can affect the criteria for a suitable product.

**DESIGN A SOLUTION OR PRODUCT.** Students should make and compare different proposals in the light of the criteria they have selected. They must consider constraints--such as cost, time, and trade-offs, and materials needed--and communicate ideas with drawings and simple models.

**IMPLEMENT A PROPOSED DESIGN.** Students should organize materials and other resources, plan their work, make good use of group collaboration where appropriate, choose suitable tools and techniques, and work with appropriate measurement methods to ensure adequate accuracy.

### **EVALUATE COMPLETED TECHNOLOGICAL DESIGNS OR PRODUCTS.**

Students

*The SOP program allows the students to take advantage of the current technologies that are being used in the field of forensic science and gives them an opportunity to design their own methodologies to solving crimes.*

## **Science in Personal and Social Perspectives**

### **CONTENT STANDARD F:**

**All students should develop understanding of**

- Personal health
- Populations, resources, and environments
- Natural hazards
- Risks and benefits
- Science and technology in society

*The various cases in the SOP curriculum allow participants to have exposure to the wider societal issues that arise when evaluating a crime scene.*

## **History and Nature of Science**

### **CONTENT STANDARD G:**

**All students should develop understanding of**

- Science as a human endeavor
- Nature of science
- History of science

*The history of forensic science, fingerprinting and other subjects related to forensic science are discussed throughout the SOP curriculum.*

All standards gathered from

<http://www.nap.edu/readingroom/books/nse>

Through the use of forensic science the science on patrol program is able to reach the young minds of its population and educate them to the diverse world of science as a career.