

# STEM Orientation



## Instructor's Guide





# Introduction

This guide is intended to provide an orientation for Scouting leaders about Scouting and the STEM program and the STEM opportunities in Scouting.

It is designed to be used with the STEM Orientation slide deck at roundtables and other training events.

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## Learning Objectives

At the end of this course, you will be able to:

- Understand what STEM is
  - Know the historic and current role of STEM in the Scouting program
  - Be aware of the BSA's STEM awards
  - Be aware of the BSA's STEM resources
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# STEM

## The BSA's Newest Program

or is it?



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Most think of Scouting as a camping movement. While that is okay, we all know that there is much more to Scouting than that. We also know that the attention paid to Science, Technology, Engineering, and Math that is part of American culture today is not new to Scouting.



BOY SCOUTS OF AMERICA

# Science Technology Engineering Math



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The acronym STEM stands for Science, Technology, Engineering, and Mathematics. This approach to education is designed to revolutionize the teaching of subject areas such as mathematics and science by incorporating technology and engineering into regular curriculum by creating a “meta-discipline.”



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Our founders, most notably Ernest Thompson Seton, understood over 100 years ago that an understanding how of scientific concepts impacted their lives, the world, and the universe was important to the development of young men. They wove the concepts throughout the program.



Among the original 57 merit badges introduced in 1911 there were many that today we would include as STEM merit badges. These included Architecture, Astronomy, Aviation, Chemistry, Electricity, Machinery, and Surveying.

From Aeronautics to Zoology, hundreds of merit badges over the last century have been STEM-related.



But it has not just been merit badges. Do you remember learning about the food chain, or how to measure the height of a tree using a stick, or how to find north by looking at the stars, or about the Earth's magnetic field, or participating in Project SOAR? Or the hundreds of other things you learned as a Scout that brought Science, Technology, Engineering, and Math into your world in a practical way?

“Incorporating technology and engineering into regular curriculum by creating a ‘meta-discipline.’”



Scouting has created interest in STEM careers and has prepared Scouts to go on to greater things in life. Thousands have gone on to excel in STEM fields.

Have you ever heard of Paul Siple? He was an Eagle Scout who accompanied Admiral Byrd to Antarctica as part of a BSA program in 1928. He went on to become an expert on Antarctica, designed cold weather gear for soldiers in Korea, and is credited with the development of the wind chill scale. Five geographic features in Antarctica are named for him.



# Why STEM?

- Our nation is at a crossroads
- Our country is falling behind
- STEM is the future



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## **Our nation is at a crossroads**

We live in a time of great opportunity, when the spirit of innovation can help us overcome challenges and ensure a prosperous and secure future.

To seize these opportunities and we must position ourselves at the cutting edge of scientific discovery and technological innovation.

## **Our country is falling behind** in science, technology, engineering and mathematics (STEM):

- In 2009, just 34 percent of U.S. 8<sup>th</sup> graders were rated proficient or higher in a national math assessment.
- In an international exam given, U.S. high school students ranked 21<sup>st</sup> out of 30 industrialized nations in science and 25<sup>th</sup> in math.
- Only 43 percent of U.S. high school graduates in 2010 were ready for college work in math and 29 percent were ready in science.

## **STEM is the future.**

- STEM education is an economic imperative. Experts say that technological innovation accounted for almost half of U.S. economic growth over the past 50 years, and almost all of the 30 fastest-growing occupations in the next decade will require at least some background in STEM.
- STEM literacy is also critical because it has a profound and growing impact on our day-to-day lives. The National Science Foundation estimates that “80% of the jobs created in the next decade will require some form of math and science skills.”

# The BSA Response



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THE BSA has partnered with ExxonMobil to increase STEM awareness in youth and offer them the opportunities to “Be Prepared for Life.”

Also, this effort will increase the awareness in the community and among parents that the Boy Scouts of America is, and always has been, concerned about these issues – and is, and always has been, making a difference in lives.



STEM/NOVA has created two new awards to encourage Scouts and Venturers to take advantage of STEM activities and awards in Scouting.

NOVA Awards are designed to a way to make learning fun!

### **Cub Scouts**

- Science Everywhere (Science)
- Tech Talk (Technology)
- Swing (Engineering)
- Designed to Crunch (Math)

### **Boy Scouts**

- Projectiles and Space (Science)
- Start Your Engines (Technology)
- Whoosh! (Engineering)
- Designed to Crunch (Math)

### **Venturers**

- What is Science



And the SUPERNOVA Award.

SUPERNOVA Awards are designed to challenge those who like the STEM fields to learn even more.

For Cub Scouts, Boy Scouts, and Venturers

Earning the NOVA award is not a prerequisite.

Currently we are proposing Supernova counselors that would operate like Merit Badge counselors

Award is more involved and challenging than the NOVA award.



## Council and District Support

- Integrate
- Inform/Educate
- Recruit
- Events



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### WHAT CAN WE DO TO SUPPORT?

**Integrate** the STEM related Cub Scout awards and Merit Badges at Day Camps/Summer Camps now.

**Inform/Educate** the Commissioner Staff to help inform unit leaders

**Recruit** a STEM committee to organize and promote the integration.

Hold STEM-based **events** to promote awareness



## National Council Support

- Web Site and Facebook
- Parent/Counselor Guide
- Flyers and Video
- Launch Kit



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### •DEDICATED WEBSITES:

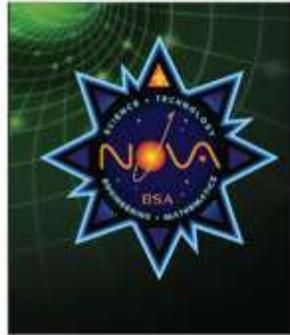
•[www.scouting.org/stem](http://www.scouting.org/stem)

•[http://www.facebook.com NOVA-Award-BSA](http://www.facebook.com/NOVA-Award-BSA)

- Parents/Counselor guide
- Promotional Flyers and Video
- STEM Initiative Launch Kit



# Think STEM!



[www.scouting.org/stem](http://www.scouting.org/stem)



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