Elementary School Modules

Bridging the Gap
Bridges have been used for centuries to reduce travel time, cross unsafe bodies of water, and bring communities together. Engineers spend years planning and designing before they begin the building process. They think about things like size, shape, and overall look of a bridge.

In this module, Scouts will discover the four main bridge types: basic beam, arch, suspension, and truss. Just like engineers, they will explore two important forces that impact a bridge as they build: compression and tension. But the engineering doesn’t stop there. Scouts will also have to think about efficiency, budget, and the overall look of their bridges. Let the construction begin!

Dinomite
Let’s get digging to explore dinosaurs, the GIANT reptiles of the past. Some were as big as houses and some were as small as chickens. Some had feathers, some had scales. Some had big, sharp teeth, and some had spikes on their spines and tails.

In this module, Scouts will become paleontologists. They will analyze sediment, recreate fossils, go on their own excavation expedition, and even create their own dinosaurs!

Scouts will practice patience and collaboration as they go through this module, and they will have to get their hands dirty to discover what it really takes to be a paleontologist!

How Things Work
Force, acceleration, and energy—oh my! From the small thoughts of “I wonder...?” to BIG discoveries, Galileo and Isaac Newton set the foundation of physics as we know it today. From understanding gravity, acceleration, and the transfer of energy, we can look at movement in a whole new light.

In this module, Scouts will gain a basic knowledge of Newton’s three laws of motion through hands-on application and discovery by building inclined planes, roller coasters, a balloon-powered plane, and circuit boards. Through challenge-based learning, Scouts will begin to understand how the world around them moves. Let’s spark some curiosity!

Ozobots
Specific steps, patience, innovation. Thanks to coding, we are now able to live our lives in a revolutionized, more convenient way!

Throughout this module, Scouts will use Ozobot robots in a variety of ways to boost their familiarity with robotics, coding, problem solving, and design planning. Starting with color codes, Scouts will become comfortable with the idea of inputs and outputs. Then they will move on to block coding with Ozobot’s online programming language, OzoBlockly.

Those who code hold the world’s technological future in their hands—and the opportunities are unlimited!
Middle School/High School Modules

Plant Biology
The plant kingdom of life is waiting to be explored! This module is about plant biology: how plants live, what they need, and how the different parts of a plant work together to keep the plant alive. And what does that have to do with us? EVERYTHING!

By analyzing plant traits and characteristics, Scouts will first discover how different plants are related. They will then learn how to extract DNA and categorize each of the traits they see (a plant’s hair color, leaf color, foot size, and leaf size). They will learn how to identify and analyze seeds, leaves, stems, flowers, and fruits to discover more about what makes up a plant.

Using examples from the grocery store or other common plants, Scouts can learn how fun biology—the science of living things—can be!

SparkFun Robotics
What are robots? Why do they exist? In this module, Scouts will be introduced to computational thinking to help them understand why and how robots are programmed. They will explore inputs and outputs, and software processes, before strategically designing and engineering their own robot. Scouts will then combine this knowledge with creativity to design a robot prototype of what “could be” in the future! Now, all systems go!

Things That Go
It’s car! It’s a plane! It’s various things that go, but how? In this module, Scouts are going to design and engineer various machines that use natural resources, motors, gravity, propulsion, and more! From balloon-powered to solar-powered, from lift and drag to thrust and leverage—let’s see how to get things moving!

Structural Engineering
Structural engineers spend their careers designing buildings and other structures that can withstand the pressures and forces of their environment. In fact, structural engineering is one of the oldest engineering disciplines. Without it, where would we be?

In this module, Scouts will increase their knowledge of structural foundations, symmetrical balance, tension, compression, and gravity. Starting with various materials, Scouts will design and engineer their own bridge and tower structures. They will then apply their knowledge, using a kit to build more complex bridges and towers in a way that requires team collaboration and communication, resilience, and critical thinking.