

Verizon Innovative Learning Lab Program

Smart Solutions

Course Overview



Course length

This course will take approximately 10 weeks (assuming five 50-minute class periods per week).

Course overview

Welcome to Smart Solutions (SS). This is an adventure themed course that employs Superheroes to creatively empower middle school students to become creators in the field of “smart” technology; those items that are connected to the internet or programmed to complete tasks. Students will practice storytelling, creating electrical circuits and devices, design thinking, game design, and coding through four hands-on units and sustainability-themed projects.

This course can be facilitated in a traditional style using the provided presentations and worksheets or completed in a self-guided capacity where students access the self-guided modules through a learning management system. We recommend finding the best balance between synchronous and asynchronous learning for your classroom.

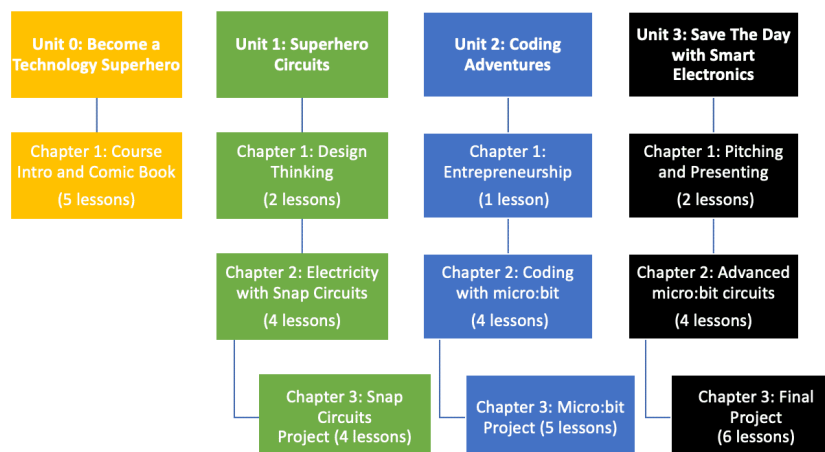
Main course objectives

Students will be able to:

- Define sustainability and solve various sustainability challenges.
- Utilize the Design Thinking process to solve real world problems.
- Develop an entrepreneurial mindset to recognize opportunities and materialize ideas.
- Define and utilize the components of a circuit.
- Build “smart solutions” that include circuit components and programming.
- Identify challenges and build smart tools that meet the needs of the end-user.

Before you begin

- Review the technology whitelist at the end of this document send it to your IT department.
- Ensure you have access to all lessons and course content.
- Familiarize yourself with the course structure:



Best practices

- This is YOUR course: customize it and facilitate it to best meet your own students' needs.
- Set norms and routines for the course: will students enter class and begin completing a mission independently? Will students work in pairs? Perhaps you will “present” each lesson at the front of the room.
- Keep students accountable and evenly paced. Perhaps students cannot move on to the next lesson until their activity has been graded.
- View facilitator guides, presentations, and activities 1-2 days before teaching them! You are not expected to be an expert at the content and technology in this course, but you are expected to learn alongside your students and help them troubleshoot!
- Develop organized systems for technology: how will students label and store hardware Micro:bits and Snap Circuits?? How will students submit their digital experiences?
- Train a “technology team”: a group of 2-3 responsible students you can task with managing technology.
- This course can be taught remotely: however, identify if a lesson needs additional modification for remote instruction. For example: if students are creating prototypes, encourage them to use trash or recyclables they can find around their home.

We are so happy to have you and your students participate in this course and learn about emerging technology. Take this curriculum and technology and run with it! We can't wait to see what you and your students will create!

Recommended hardware

- It is recommended to purchase classroom sets of each of the hardware kits below. We do not promote specific brands or companies, but many of the curriculum examples utilize the following kits:
 - [Snap Circuits Classic Kit \(1-2 students per kit\)](#)
 - [Micro:bit Sensor Starter Kit \(1-2 students per kit\)](#)

Technology whitelist

- Ensure your school's IT department has enabled students the ability to access the following websites and applications. These websites are student friendly, but district approval may vary.
- Make Code: <https://makecode.microbit.org/>
- Adobe Spark: <https://spark.adobe.com/sp/>