



Springfield-Clark CTC provides high-quality, hands-on career technical education programs that help students become Career Ready, College Ready, and Life Ready.

CTC, in collaboration with Clark State College, Ohio College Tech Prep, the University of Dayton, and the Ohio Academy of Science offers Future Ready Career Kits for students in Grades 1-8.

Kits are hands-on activities that students can complete at home (or in the classroom) to give experience in STEM and other problem-solving skills. Kits are free and covered by Career Awareness dollars from the state of Ohio.

**CTC CAREER EXPLORATION FOR STUDENTS**



**CAREER KITS**  
FOR STUDENTS  
[SCCTC.org/Camps](http://SCCTC.org/Camps)



**CAREER CAMP**  
FOR STUDENTS  
[SCCTC.org/Camps](http://SCCTC.org/Camps)

**CTC CAREER EXPLORATION FOR TEACHERS**

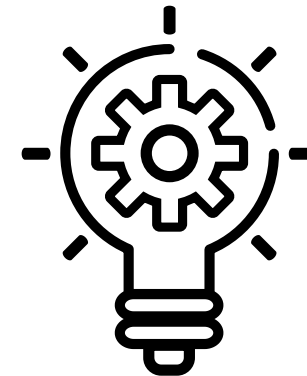


**CAREER CAMP**  
FOR TEACHERS  
[SCCTC.org/Camps](http://SCCTC.org/Camps)

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# ENGINEERING: HAVE YOU LOST YOUR MARBLES?



**FUTURE READY CAREER KIT BROUGHT TO YOU BY**



# FUTURE READY CAREER KIT

## ENGINEERING: HAVE YOU LOST YOUR MARBLES?

### ENGINEERING

Anything that is built must first be designed by an engineer. An engineer is a person who and builds products, machines, systems, or structures. Engineers want to know how and why things work. They have scientific training that they use to make practical things. Engineers use a design process to solve problems. In this kit, you will use a design process that:

- Identifies a problem or challenge.
- Sketches out design requirements.
- Brainstorms possible solutions to the problem.
- Selects an approach that appears to solve the problem the best.
- Builds a design!

### ENGINEERING PROGRAMS AT CTC:

- Applied Engineering & Manufacturing [SCCTC.org/](http://SCCTC.org/)
- Engineering & Architectural Design [SCCTC.org/Engineering](http://SCCTC.org/Engineering)

## CONTEST!

Win an Amazon Gift Card and free admission to our Future Ready Camps this summer!

Post a pic or video on Instagram with #SCCTCkits and what you liked/learned from your Future Ready Career Kit!



@springfieldclarkctc #SCCTCkits

### KIT DESCRIPTION

This kit contains all of the tools you need to solve the Marble Challenge. This challenge was created by the University of Dayton's School of Engineering.

### MATERIALS IN THIS KIT

- 2 cups, 4 craft sticks, 1 paper towel 1/2 roll,
- 1 sheet of construction paper, 6 straws,
- 1 yard string, 6 inches of tape, 6 index cards,
- 7 marbles, and stickers - to decorate your kit box!

### THE DESIGN CHALLENGE

You work as a line crewmember (a person that loads and unloads luggage) for an airline company.

Because unloading luggage from an airplane by hand is time consuming and inefficient, you decide to try and come up with a better luggage transport system.

Your challenge is to design a better system for transporting luggage straight from the airplane to the conveyor belt where passengers pick up their belongings. Your design must transfer marbles from an elevated cup (airplane) to a cup on a lower level (baggage claim area). Your cup should be elevated at least 6-8 inches.

### CHALLENGE:

- Design and build a ramp to move the marbles from the top cup (airplane) to the lower cup (luggage rack).
- Use only the materials provided.
- Don't let any marbles fall off the design.
- Transport all the marbles.



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