

V5 Preview: Robosoccer

12-18 years old | 45 min - 4 hrs, 35 min | Beginner



Description

Students are asked to build and utilize a robot to dribble a ball and iterate on its design.

Key Concepts

Engineering Design, Engineering Notebook, Iterative Design

Objectives

- Assemble and then modify a robot to complete a specific task.
- Construct and arrange ideas in an engineering notebook.
- Identify the criteria and constraints of the solution for their design problem by considering environmental constraints.
- Understand the design features that need to be considered when designing an attachment to a robot.

Materials needed

- 2 or more VEX V5 Classroom Starter Kits
- Roll of Tape
- Meter Stick or ruler
- Two small boxes for goals
- Regular sized soccer or playground ball
- Cones: Can use VEX competition cones, gym cones, or large cups used upside down
- Engineering Notebook
- Stopwatch

Facilitation Notes

- Ensure all required parts for the build are available prior to starting this STEM Lab.
- Although the V5 Robot Brain is included in the build of the VEX V5 Speedbot, no programming is required.
- Make sure that there is ample space in the classroom to measure out and tape the field that will be used.
- An engineering notebook can be as simple as lined paper within a folder or binder. The notebook shown is a more sophisticated example that is available through VEX Robotics.
- During the iterative design process prior to the challenge, teams should be testing efficiency and placement of the attachments they create for the VEX V5 Speedbot to aid in moving the ball efficiently to the goal.

- The approximate pacing of each section of the Stem Lab is as follows: Seek- 125 minutes, Play- 50 minutes, Apply- 15 minutes, Rethink- 45 minutes, Know- 5 minutes.

Further Your Learning

Science

Try hitting the ball from a set distance but from different angles. Do this enough times to get a consistent sampling. Were different angles more successful than others? Create a graph to show your results and conclusion.

Social Studies

Discuss: What do people in most countries call soccer? How far back in history has soccer been played? Do games like this pull us together or apart as a nation?

English

Research and write a paragraph about a famous soccer player such as Lev Yashin, Cafu, Pele, Mia Hamm, Megan Rapinoe or Marta.

Educational Standards

Standards for Technological Literacy (STL)

- 1.G
- 1.H

Next Generation Science Standards (NGSS)

- HS-ETS1-2

Common Core State Standards (CCSS)

- SL.9-10.1
- SL.9-10.4
- MP.1