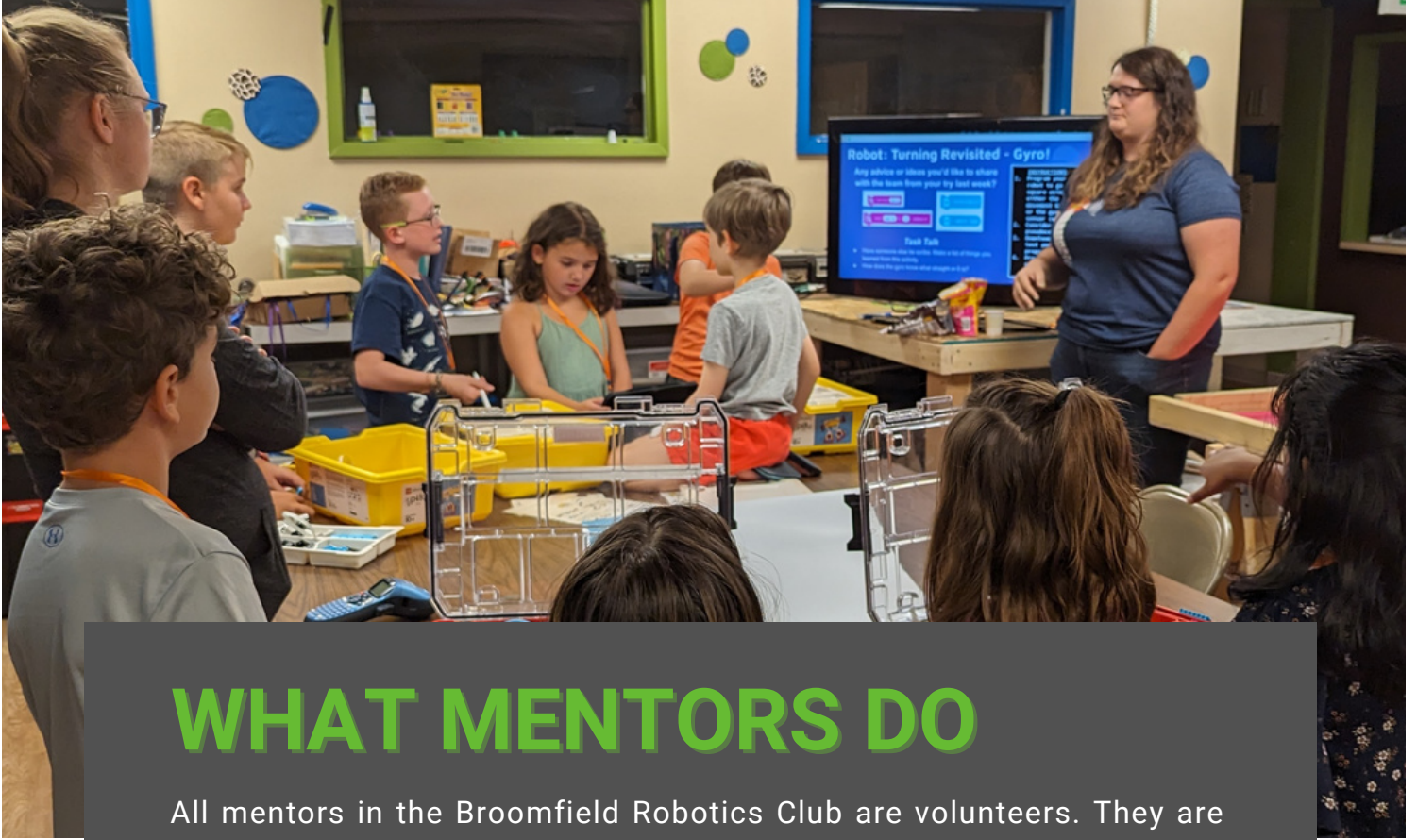# Broomfield STEM

Mentor with Us

We are not using kids to build robots.

WE ARE USING ROBOTS TO BUILD KIDS.

-Dean Kamen, *FIRST* Founder

WHAT MENTORS DO

All mentors in the Broomfield Robotics Club are volunteers. They are engineers, programmers, teachers, parents, FIRST alumni, college students, robot enthusiasts, and more. As a team, they strive to inspire and empower students to be innovators. They work side by side with students at our workshop in Broomfield, CO to teach STEM concepts, develop leadership and problem-solving skills, and build each student's sense of belonging and self-confidence.

This includes:

- Modeling Gracious Professionalism at all times, and encouraging students to do the same
- Fostering a safe, inclusive culture where everyone contributes to the team, and can make mistakes, take risks, learn, and grow
- Guiding students through the Engineering Design Process as they design, build, code, test, and iterate
- Observing the strengths and interests of each student and then determining next steps to help each student learn, grow, and develop new skills
- Ensuring students are safely using tools and equipment
- Teaching students time and project management, technical documentation, and presentation skills
- Assisting students in applicable research and data collection, directing them towards helpful resources and tools as needed
- Providing intentional opportunities for students to develop teamwork and leadership skills
- Reinforcing the FIRST Core Values of Innovation, Discovery, Inclusiveness, Teamwork, Impact and Fun

USEFUL SKILLS

We believe that good mentors come from a variety of backgrounds and professions. The skills listed below are helpful for our technical mentors to have, but are not meant to exclude anyone who loves kids, has a desire to mentor, and is willing to learn! Please ask us about roles for non-technical mentors, as they are critical to our program as well.

Early Engineer Mentors
- Basic understanding of coding (Scratch) and elementary science and math principles

FIRST Lego League Mentors
- Basic coding ability (Students learn Scratch and eventually Python)
- Proficiency with Google Suite/Microsoft Office, Slack, Email, Search Engines
- Experience with simple sensors (color, distance, touch, gyro)
- Experience with simple mechanisms such as levers, pulleys, gears, motors, etc.

FIRST Tech Challenge Mentors
 -Software-
- Intermediate experience with Java and object oriented programming, with a basic understanding of embedded systems a plus. (Students program using Android Studio)
- Proficiency with Git, Google Suite/Microsoft Office, Slack, Email, Search Engines
- Basic experience with controlling hardware using software, including sensors, servos, and motors (hardware drivers are all abstracted in the SDK, so no low level hardware programing needed)
- Ability to debug, troubleshoot, and plan a medium complexity software project.
 -Hardware-
- Knowledge of simple mechanisms such as levers, pulleys, gears, linkages, motors, servos etc.
- Proficiency with CAD design (Students use OnShape), Google Suite/Microsoft Office, Slack, Email, Search Engines
- Basic experience with hand and power tools (screwdrivers, wrenches, handsaw, drills, drill press, band saw)
- Ability to guide students through brainstorming, prototyping, and iteration of their designs

TIME COMMITMENT

All Mentors:
- Mentor Planning Sessions as needed (no more than 1/month, day and time TBD)
- Possible Prep Time before meetings (on own)
- Mentor meetings/trainings as needed (3 hours each, usually in May, July, October and January)
- Broomfield Robotics Club Annual Celebration in April

Early Engineers:
- Club meeting once/month June - April (3 hours/meeting on the fourth Friday of the month 5:30 - 8:30 pm)

***FIRST* Lego League:**
- Team meeting every Monday and/or Friday (Mentors can commit to one or both) 5:30 - 8:30 pm June - December, Once/month January - April
- 2 hour Work Sessions every Sunday afternoon October & November through Competition
- Competitions - 1 Scrimmage in October, 1 Saturday in November, 1 Saturday in December (only if team qualifies for State tournament)

***FIRST* Tech Challenge:**
- Team meeting every Wednesday 5:30 - 8:30 pm June - April
- Robot Work Days one Saturday/month 10:00 am - 4:00 pm September - February (Additional work days may be added as needed)
- Scrimmages & Competitions (1 Saturday in November, 1 Saturday in December, 4 Saturday tournaments in January and February)
- Team Outreach events and Field Trips (2-3/ month June - August, 1/month September - May: Mentors attend when they are able)

GETTING STARTED

CHOOSE A PROGRAM

More information about each of our programs can be found on our website at broomfieldroboticsclub.org. If you are interested in mentoring one of our *FIRST* teams, you should also visit firstinspires.org. Feel free to reach out to Jamie Rumsey, our Program Director, if you have any additional questions or would like to schedule a visit. Jamie can be reached by email at jamie@broomfieldstem.org.

APPLICATION PROCESS

The application process consists of an online application, registering with *FIRST*, a background check and reference check, Youth Protection Training, signing Consent and Release agreements for Broomfield STEM and *FIRST*, and agreeing to our Mentor Expectations and Code of Conduct.

MENTOR SUPPORT

We know that learning to be a mentor can take time and patience. Our goal is to provide our mentors with the training, resources and support they need to help their students and themselves learn and grow. This includes providing easy access to *FIRST* and STEM related resources, fostering teamwork among mentors, and offering occasional trainings on how to work with and teach students effectively. You don't have to come in knowing how to be a mentor, and you don't have to figure it out alone!

CONTACT US

To begin the application process, email Program Director Jamie Rumsey at jamie@broomfieldstem.org. We look forward to hearing from you!