

FIRST® Tech Challenge Academy Professional Development

Course Description

The FIRST® Tech Challenge Academy professional development is a 40-hour course that gives attendees a deep understanding of a FIRST® Tech Challenge season and how to implement the program to achieve science, technology, engineering, and math (STEM) learning objectives. In FIRST Tech Challenge, students learn to think like engineers. Teams design, build, and program robots to compete in an alliance format against other teams with a spirit of friendly competition. Many call it “the hardest fun you’ll ever have.” Participants in this course will walk through the season as they engage in these hands-on experiences and practice engineering principles such as fabrication, 3D printing, keeping an engineering notebook, and planning for interdisciplinary awards applications.

Course Requirements

FIRST® provides for use during professional development:

- FIRST Tech Challenge Robot kit - REV Robotics Kit
- Control and Communication Set
- Electronics Module, Huskey Lens, and Sensor Set

Participant Brings:

- Computer with internet access
- Download REV Hardware client software prior to first session – <https://docs.revrobotics.com/rev-hardware-client/>. This program is needed for all electronic hardware used to build the FIRST Tech Challenge robot and only operates on MS Windows OS device.

Mac Users: Please note that an Apple OS version of the hardware client is currently unavailable. To update the firmware and hardware, please refer to the FIRST Tech Challenge support documentation for detailed instructions on utilizing Manual Update Method 2 as outlined by REV. Instruction are found at https://docs.firstinspires.org/en/latest/ftc_sdk/updating/controlhub_os/Updating-the-Control-Hub-OS.html.

Course Objectives

By the end of this course, you will:

- Participate in the FIRST experience from a student’s point of view.
- Explore the essential components of the FIRST Tech Challenge program.
- Feel comfortable using hardware and software components of FIRST Tech Challenge robotics kits.
- Feel comfortable using fabrication techniques and 3D printing.
- Understand how to create autonomous and teleop codes using the Blocks programming software.
- Learn to incorporate Tensor Flow, Inertial Measurement Units, Huskey Lens, and Sensors into the autonomous and teleop Blocks codes.
- Know how to access additional resources.
- Be familiar with best practices for a competitive season.
- Learn how to facilitate hands-on activities for the classroom or after-school programs.
- Be able to foster computational thinking, collaboration, and problem-solving skills in students.
- Develop experience with Project-Based Learning, the Engineering Design Process, and 21st Century Skills.
- Learn to build teams, participate in robot game matches, and present to judges.
- Utilize, model, and reinforce the FIRST Core Values!