FTC INTRO ROBOTICS CAMP

A five-day plan for a middle school robotics camp run by an FTC team.

The camp is for rising 6th–9th graders. Campers split into one or two mini teams, and each team builds and programs its own robot with help from the students on your FTC team. Nobody needs to have built or coded anything before.

Each day starts with a short lesson on one topic. After that, teams spend most of the block working on their robot while your mentors move between tables. On the last day teams play timed matches on a practice field, and families come in for a short showcase.

A camp is more work for the host team than a one-day event. It's also the outreach most likely to turn into new members, since campers leave having done the actual work of an FTC team for a week.

Plan on about 3 hours a day. One robot can handle 5–8 campers. With two robots you can take up to 16.

Who brings what

We send daily lesson plans, the starter code and build notes, a score sheet for game day, and printed posters, stickers, and name tags. We also train your mentors before camp, and a Spark Gears mentor is on call all week.

The host team provides the room, recruits campers, and staffs every day with its own members. You'll also need one FTC robot kit per mini team. A robot from a past season works fine. If you don't have one, tell us when you request support and we'll help you find one or scale the camp down.

Campers bring a laptop, closed-toe shoes, and their own snack and water.

A typical day

Block	Time	What happens
Warm-up	15 min	A quick challenge or question, attendance, safety glasses on
Lesson	20–30 min	One new topic, taught with a demo on a real robot
Team work	75–90 min	Teams build, wire, or code. Mentors rotate between them.
Break	15 min	Snack and water, away from the tables
Team work	30–45 min	Keep going, test, and fix what broke
Stand-up	10 min	Each team says what got done, what's stuck, and tomorrow's plan

Day by day

Day 1. Meet the challenge

Block	Activity	Notes for mentors
Morning	Introductions, camp rules, and safety glasses. Watch the current FTC game reveal video together.	Keep the video to about 5 minutes. Pause it to explain scoring.
Midday	Split into mini teams. Each team picks a name and number and draws a logo.	Branding gets quiet campers talking. Have markers and poster paper out.
Afternoon	Tour a real FTC robot. Campers find the Control Hub, motors, servos, and battery.	Let them hold parts and drive it with a gamepad for a few minutes.
Wrap-up	Each team picks one game task to focus on for the week.	Small goals get finished. One task done well beats three half done.

Day 2. Design and start building

Block	Activity	Notes for mentors
Lesson	How drivetrains work, reading a build guide, and using hex keys safely.	Put a finished drivetrain next to a pile of its parts.
Team work	Sketch the robot on paper and decide who builds the drivetrain and who builds the mechanism.	Every camper gets a job. Rotate jobs each day.
Build	Start the drivetrain, with the frame, motors, and wheels.	Check that the motors are mounted the same way on both sides.

Day 3. Keep building

Block	Activity	Notes for mentors
Lesson	Wiring the Control Hub and keeping cables tidy.	Show a messy wiring job next to a clean one.
Build	Finish and wire the drivetrain, then start the scoring mechanism.	Loose wires cause most robot failures. Zip-tie as you go.
Test	First drive with the sample code.	Tape a square on the floor and have drivers park inside it.

Day 4. Program the robot

Block	Activity	Notes for mentors
Lesson	OnBot Java basics. What an OpMode is and how gamepad input sets motor power.	OnBot Java runs in a browser connected to the Control Hub, so there's nothing to install.
Code	Write a TeleOp from the starter code, then map the mechanism to buttons.	Let campers change numbers and see what happens.
Stretch	A 5-second autonomous routine that drives forward and parks.	Timing-based is fine. Encoders are a bonus.

Day 5. Game day and showcase

Block	Activity	Notes for mentors
Morning	Last fixes and driver practice.	Freeze the code an hour before the matches.
Matches	Each team plays timed matches on the practice field and records its scores.	Use the score sheet. Cheer loudly.
Showcase	Families come in. Each team presents its robot and what it learned.	2–3 minutes per team. Every camper says one thing.

Starter TeleOp code

Paste this into OnBot Java. In the robot configuration, name the drive motors **left** and **right**. Campers add their mechanism controls inside the loop.

CampDrive.java

```
package org.firstinspires.ftc.teamcode;

import com.qualcomm.robotcore.eventloop.opmode.LinearOpMode;
import com.qualcomm.robotcore.eventloop.opmode.TeleOp;
import com.qualcomm.robotcore.hardware.DcMotor;

@TeleOp(name = "Camp Drive")
public class CampDrive extends LinearOpMode {
    @Override
    public void runOpMode() {
        DcMotor left = hardwareMap.get(DcMotor.class, "left");
        DcMotor right = hardwareMap.get(DcMotor.class, "right");
        right.setDirection(DcMotor.Direction.REVERSE);

        waitForStart();

        while (opModeIsActive()) {
            double drive = -gamepad1.left_stick_y;   // push forward = drive forward
            double turn = gamepad1.right_stick_x;

            left.setPower(drive + turn);
            right.setPower(drive - turn);

            telemetry.addData("Drive", drive);
            telemetry.addData("Turn", turn);
            telemetry.update();
        }
    }
}
```

Team roles

Campers rotate roles each day so everyone gets time building, coding, and driving.

Role	What they do
Builder	Assembles and repairs the robot and keeps track of parts
Programmer	Writes and tests code and tunes the controls with the driver
Driver	Practices driving and reports what's hard to control
Captain	Keeps the team on schedule and leads the stand-up
Brand lead	Logo, poster, photos, and the showcase talk

Logistics and safety

Grades	Rising 6th–9th graders. A strong 5th grader can join with a parent's okay.
Group size	5–8 campers per robot. Two robots means two teams of up to 8.
Daily length	About 3 hours. Mornings work best in summer.
Mentors	At least one experienced mentor per team, plus an adult on site the whole time.
Safety	Everyone wears safety glasses while a robot is powered or being built. Closed-toe shoes only. Disable the robot before anyone reaches into it. Unplug batteries when they're not in use, and never leave one charging unattended.
Families	Invite them to the day 5 showcase. It's the best photo opportunity of the week.

Questions? Email **sparkgearsinitiative@gmail.com** or call **571-429-9220**. You can request a mentor or a supply kit at sparkgearsinitiative.org/for-teams.html.