

Welcome SPECTATORS!

FIRST® Progression of Programs FIRST® is the world's leading child-serving nonprofit advancing science, technology, engineering, and math (STEM). For nearly 30 years, FIRST has evolved into a global movement by engaging millions of people with a proven game-changer for preparing kids to solve the world's greatest problems. FIRST programs inspire innovation and leadership through engaging, hands-on robotics challenges developed to ignite curiosity and passion in students in grades K-12. FIRST builds powerful mentorship relationships between young people and STEM professionals, helping kids gain confidence to explore the innovation process while they learn valuable science, engineering, technology, teamwork, and problem-solving skills. FIRST creates the people who will change the world – today and tomorrow.



FIRST LEGO LEAGUE JR.

FIRST® LEGO® League Jr. teams build and program a model that moves using LEGO® Education WeDo and present their research journey on a *Show Me* poster.

Children, Ages 6-10 (Grades K-4), get to:

- Design and build a Challenge-related model and make it move using LEGO WeDo
- Create a *Show Me* Poster and practice presentation skills
- Explore challenges facing today's scientists
- Discover real-world math and science
- Begin developing teamwork skills
- Participate in expos
- Engage in team activities guided by FIRST LEGO League Jr. Core Values



FIRST LEGO LEAGUE

FIRST® LEGO® League teams build LEGO®-based robots and develop research projects based on a real-world Challenge that changes annually. Their activities are guided by FIRST LEGO League Core Values.

Students, Ages 9-16* (Grades 4-8), get to:

- Create innovative solutions to challenges facing today's scientists
- Strategize, design, build, program, and test an autonomous robot using LEGO MINDSTORMS® technology
- Apply real-world math and science concepts
- Develop career and life skills including critical thinking, time management, collaboration, and communication while becoming more self-confident
- Become involved in their local and global community
- Participate in official tournaments and local events
- Engage in team activities guided by FIRST LEGO League Core Values

*Ages vary by country



FIRST TECH CHALLENGE

FIRST® Tech Challenge students learn to think like engineers. Teams build robots from a reusable kit of parts, develop strategies, document their progress, and compete head to head.

Students, Ages 12-18 (Grades 7-12), get to:

- Design, build, and program robots
- Model a real-world engineering process
- Apply math and science concepts
- Develop strategic problem-solving, organizational, and team-building skills
- Build life skills while building robots and work towards participating in tournaments and FIRST Championship
- Compete and cooperate in Alliances at tournaments
- Access exclusive scholarships from hundreds of colleges/universities

Rockwell Collins is the FIRST Tech Challenge Official Program Sponsor



FIRST ROBOTICS COMPETITION

FIRST® Robotics Competition teams compete with 120-pound robots of their own design, combining the excitement of sport with the rigors of science and technology.

Students, Ages 14-18 (Grades 9-12), get to:

- Work alongside professional engineers
- Build and compete with a robot of their own design
- Learn and use sophisticated hardware and software
- Develop design, project management, programming, teamwork, strategic thinking, and *Coopertition*® skills
- Earn a place in the FIRST Championship
- Access exclusive scholarships from hundreds of colleges/universities



At the heart of FIRST are its Core Values, which emphasize the contributions of others, friendly sportsmanship, teamwork, learning, and community involvement. These include: **Gracious Professionalism®** – Respect for others, being a good sport, and sharing what you learn. **Coopertition®** – Competing hard, but also helping the other teams.

FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY

For information about FIRST® in your area: www.firstinspires.org/contactus

FIRST® Robotics Competition Game

FIRST® POWER UP,SM the 2018 FIRST® Robotics Competition game, finds our teams trapped in an 8bit video game! Teams use power cubes to defeat the boss.

Each three-team alliance has three ways to help defeat the boss:

1. Owning the scale or their switch.

Ownership occurs when the scale or alliance's switch is tipped in their favor. Robots collect and deliver power cubes to gain ownership.

2. Playing power ups. Alliances exchange power cubes for power ups. Power ups provide a timed advantage during the match. There are three power ups that can be played: Force, Boost, and Levitate.

3. Climbing the scale tower. Robots work together to climb the scale tower to face the boss.

Autonomous Period:

Robots operate independently following preprogrammed instructions for the first fifteen seconds of the match.

Alliances score points by:

- Reaching their own autonomous line
- Gaining ownership of the scale or their switch

Teleoperated Period:

Operators take control for the final two minutes and fifteen seconds of the match.

Alliances continue to score points by:

- Gaining ownership of the scale or their switch
- Delivering power cubes to the alliance's vault
- Using power ups for a timed advantage
- Parking on the scale platform or climbing the scale to face the boss

The alliance with the highest score at the end of the match defeats the boss and wins.

