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
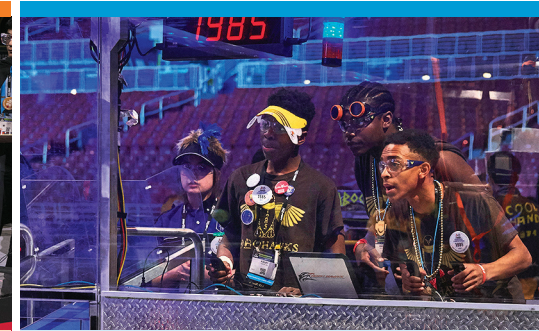
FIRST ROBOTICS COMPETITION

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

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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.*

FIRST

For Inspiration & Recognition of Science & Technology

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

FIRST ® Robotics Competition Game

FIRST ® POWER UP,ᔆᴹ 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.