Welcome SPECTATORS!

***FIRST*® learning** never stops building upon itself, starting at age 6 and continuing through middle and high-school levels up to age 18. Young people can join the international, K-12, after-school STEM programs at any level. *FIRST* inspires STEM innovation excellence by teaching participants a multi-disciplinary set of 21st century skills and immersing them in project-based learning and robotics competitions made possible by public and private partnerships. Working with volunteer adult Mentors/Coaches, *FIRST* youth receive the benefit of real workforce training.

PROGRESSION OF PROGRAMS

FIRST LEGO LEAGUE JR.
Ages 6-10
(Grades K-4)

FIRST LEGO LEAGUE
Ages 9-16*
(Grades 4-8)

FIRST TECH CHALLENGE
Ages 12-18
(Grades 7-12)

FIRST ROBOTICS COMPETITION
Ages 14-18
(Grades 9-12)

***FIRST*® LEGO® League Jr.** teams design and construct a model with motorized parts using LEGO® elements and present their research journey on a *Show Me* poster.

Children, ages 6-10, get to:

- Explore challenges facing today's scientists
- Discover real-world math and science
- Begin developing teamwork skills
- Engage in team activities guided by FIRST LEGO League Jr. Core Values

***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*, get to:

- Strategize, design, build, program, and test an autonomous robot using LEGO MINDSTORMS® technology
- Create innovative solutions to challenges facing today's scientists
- Develop career and life skills including critical thinking, time management, and teamwork
- Become involved in their local and global community   *Ages vary by country

***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, get to:

- Design, build, and program robots
- Model a real-world engineering process
- Develop strategic problem-solving, organizational, and team-building skills
- Qualify for millions of dollars in scholarships

***FIRST*® Robotics Competition** teams compete with 120-pound robots of their own design in this varsity *Sport for the Mind,*™ combining the excitement of sport with the rigors of science and technology.

Students, ages 14-18, get to:

- Work alongside professional engineers
- Learn and use sophisticated hardware and software
- Develop design, project management, programming, teamwork, strategic thinking, and Coopertition® skills
- Qualify for millions of dollars in scholarships

Gracious Professionalism® | *Coopertition*® | *Sport for the Mind*™

FIRST® FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY

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

FIRST® Robotics Competition 2017 Game

FIRST STEAMWORKS,℠ the 2017 *FIRST* Robotics Competition game, invites two adventure clubs from an era in which technology relied on steam power to prepare their airships for the ultimate long distance race.

Each three-team alliance prepares to take flight in three ways:

1. **Build Steam Pressure.** Robots collect fuel represented by green balls. They score it in high and low goals in their boiler. As fuel is scored steam pressure in the tank on the alliance's airship builds – the high goal builds pressure faster than the low goal.

2. **Start Rotors.** Robots retrieve and deliver gears to pilots on their airship who then install them on the appropriate rotor. Once a gear train is complete the rotor can be started.

3. **Prepare for Flight.** Adventure clubs want their robots to climb aboard their airships so they can assist the pilots during the race.

Autonomous Period:

Robots operate independently from preprogrammed instructions for the first 15 seconds.

Adventure clubs score points by:
- Reaching their baseline
- Delivering gears to the airship
- Scoring fuel into the boilers

Teleoperated Period:

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

Adventure Clubs continue to score points by:
- Collecting and delivering gears to their airship
- Scoring fuel in the boilers
- Climbing the ropes on their airship to prepare for flight
- Populating gear trains to start rotors
- Defending against other Adventure Clubs

The adventure club with the highest score at the end of the match is best prepared for the race and wins.