



FIRST LEGO Robotics is an engaging and educational program that introduces students to the exciting world of robotics through hands-on, collaborative learning. Designed for children and teenagers, this initiative blends the power of LEGO building blocks with cutting-edge technology to inspire a passion for science, technology, engineering, and mathematics (STEM). I first became involved in Lego Robotics as part of a NASA Explorer School initiative I led for Sterling Elementary School in Alaska in 2004. I was invited to a training at Jet Propulsion Laboratory in California, where they ran through a week-long training on how to use and code the first generation of Lego Robots - the RCX. Since then I've coached and mentored teams in Alaskan villages, the Russian Far East, and most recently Uzbekistan and Kazakhstan in Central Asia as well as continuing to coach teams at my home school (currently Williston Central School in Vermont where we have two middle school teams). I love the program and can attest that it has truly been a catalyst for many young scientists and engineers to continue on into STEM Careers. Here is the basics of the program:

According to FIRST Lego - these are the important components of the overall program:

- **LEGO Mindstorms Kits:** Participants use LEGO Mindstorms kits, which include programmable bricks, motors, sensors, and a variety of LEGO elements. This provides a versatile platform for building and programming functional robots.
- **Team-based Learning:** Students work in teams, fostering collaboration, problem-solving, and communication skills. Each team is tasked with designing, building, and programming a robot to complete specific challenges on a thematic playing field.

- **Challenge Themes:** Each season, FIRST LEGO Robotics introduces a new and exciting challenge theme. These themes range from space exploration and city development to environmental sustainability, ensuring that participants engage with real-world issues and develop a holistic understanding of STEM concepts.
- **Programming Skills:** Participants learn to program their robots using user-friendly software. This hands-on experience with coding helps develop computational thinking and introduces participants to fundamental programming concepts.
- **Research Project:** Beyond the robot game, teams are required to identify a real-world problem related to the annual theme and develop an innovative solution. This encourages critical thinking, research skills, and creativity.
- **Competitions:** Teams have the opportunity to showcase their robots and projects at local, regional, and international competitions. These events not only provide a platform for friendly competition but also foster a sense of community and camaraderie among participants.

And these are the educational outcomes that the program achieves:

- **STEM Exploration:** FIRST LEGO Robotics sparks interest in STEM fields by providing a fun and accessible entry point for students. It nurtures curiosity and a love for learning.
- **Life Skills:** Participants develop essential life skills such as teamwork, time management, communication, and problem-solving, preparing them for success in future academic and professional endeavors.
- **Inclusivity:** The program promotes inclusivity by welcoming students of all backgrounds and skill levels. It celebrates diversity and encourages a collaborative spirit.
- **Inspiration for Future Careers:** FIRST LEGO Robotics inspires a new generation of engineers, scientists, and innovators by offering a glimpse into the exciting possibilities of STEM careers.

In summary, FIRST LEGO Robotics is a dynamic educational program that empowers young minds to explore STEM concepts in a creative and collaborative environment. Through the combination of LEGO building, programming challenges, and real-world problem-solving, participants not only build robots but also develop the skills and passion necessary for a future in science and technology.

If you'd like to learn more - here is the LEGO FIRST Website:

<https://www.firstinspires.org/robotics/fl>

STEM4Learning also offers a workshop designed to help jumpstart a LEGO robotics program at any school - it could be an afterschool program, part of a homeschool program, or an actual class in your school. Reach out if you'd like to learn more to stem4learning@gmail.com