ROBOTICS

Robotics: Bot Builders

Inspiring the Future of STEM

Artificial Intelligence: AI Adventurers

Our Robotics "Bot Builder" program delivers hands-on, project-based engineering and coding experience using LEGO SPIKE Prime and VEX IQ systems. It guides students through mechanics, autonomous decision-making, and real-world problem-solving.

Program Description

- **Hands-on machine building:** Students design, build, and program diverse working machines and robots using Lego and VEX IQ.
- **Sensor suite mastery:** Students program robots to dynamically interact with surroundings using sensors for color, distance, camera, force, gyro, and collisions.
- **Programming and decision logic:** Students advance from basic motor controls to complex loops, conditionals, nested decision-making algorithms, and custom My Blocks.
- **Navigation and mechanisms:** Explores precision movement, traffic rule execution, line following, weight dynamics, and mechanisms like plows.
- **Competitive Prep:** Students participate in in-class arena challenges and local competitions.

Program Structure

- After-school Club (1.5-2 hrs)
- Women in STEM
- Capstone Project
- Competitions and Hackathons
- Guest Speaker(s)

New Jersey Science Standards

- **MS-ETS1-1:** Design Criteria (Define criteria/constraints of a design problem)
- **MS-ETS1-2:** Solution Evaluation (Systematically evaluate design solutions)
- **MS-ETS1-3:** Design Analysis (Analyze test data and combine best design features)
- **MS-ETS1-4:** Interactive Testing (Model, test, and refine an optimal design solution)

Learn more about JerseySTEM

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