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3rd-5th LEGO EV3 Robotics Syllabus

This class uses the LEGO Mindstorm EV3 robotics platform. Progress records are maintained to allow students to pick up where they left off in the previous semester or year.

Returning students will pick up where they left off in the previous semester. We continuously evaluate the students' progress and abilities. Based on these evaluations we can advance students when appropriate. We are also looking at student skills to identify those who are good builders, good programmers, or both. This can lead to additional opportunities such as robotics clubs, higher level classes such as Coding and VEX Robotics classes, or both.

Our FIRST LEGO League competition team participates each year in the FLL challenge. The equipment from previous challenge seasons will be used for our advanced EV3 students to practice building and programming to achieve selective missions included in each challenge.

LEGO Mindstorm EV3 Robotics (Beginner Level)

Using Lego EV3 robot kits, students will build a base robot and learn how to program it using drag and drop graphical programming. After the students move through basic programming, they will have the opportunity to choose a custom robot to build and operate using autonomous programming or with manual remote controls such as a smart phone app.

Topics – Sequence subject to change

- LEGO Mindstorms EV3 Orientation (Brick and Software)
- Sensors and Motors Tests
- Educator Robot Build
- Moving Straight
- Turning
- Displaying Text and Graphics
- Square Challenge
- Rectangle Challenge
- Begin Free builds based on LEGO Website builds
- Remote Control

LEGO Mindstorm EV3 Robotics (Intermediate Level)

Topics – Sequence subject to change

- Educator Robot Build
- Color Sensor
- Stop on Color, Stop and Reverse on Color
- Switches
- Ultrasonic Sensor
- Stop at an Object
- Forward on Object
- Sumobot build modifications
- Sumobot Programming and tests
- Sumobot Competitions

LEGO Mindstorm EV3 Robotics (Advanced Level)

Topics – Sequence subject to change

- Enterprise Robot Build
- Loops
- Basic Line Follower
- Moving an Object
- Avoiding an Object
- Brick Buttons as Sensors
- Data Wires
- My Blocks with Inputs or Outputs
- Moving with My Blocks
- Turning with My Blocks
- Line Following with Obstacles Challenge

LEGO Mindstorm EV3 Robotics (Genius Level)

Topics – Sequence subject to change

- Color Sensor Calibration
- Color Line Follower with My Blocks
- Move Blocks
- Variables
- Logic Operations and Decision Making
- Parallel Beams
- Arrays
- Proportional Control
- Ramping Up
- Squaring On Lines
- Basic Ultrasonic Wall Follower
- Stall Detection
- Menu System
- Bluetooth
- Files