



# DISCOVER ROBOTICS & PROGRAMMING CLASSROOM CURRICULUM

Grades: 6-8

**Students:** 1-3 per Kit

**Contact Hours:** 25+

**Recommended Settings:**

- Traditional classrooms
- At home learning

**Pricing Options:**

- Single Kit: \$379
- Value Pack (5 Kits): \$1895
- Classroom Set (16 Kits, stored in a high-quality hardwood furniture unit with rolling casters): \$6595

**Materials:**

- 1 bound Discover Robotics and Programming Student Manual
- 1 bound Discover Robotics and Programming Instructor Manual
- Specialized PCS Robotic Controller, The Brain™
- Bluetooth Dongle
  - Available in BLE for iPads or Classic for all computers and Android-based tablets
- USB Cable
- Advanced Sensor Pack including 1 ultrasonic, 1 light, 2 touch, 2 infrared, 2 LEDs, and 5 sensor cables
- 2 9V DC motors and 2 motor cables
- Rechargeable 11.1V LiPo battery and DC wall adapter
- Advanced engineering manipulatives from fischertechnik™
- Compartmentalized Gratnell storage bin with lid

**Technical Requirements:**

- One device per kit with Windows, Os X, iOS or Android operating system. Cortex is currently not compatible with Google Chromebooks.
- All tablets require Internet connection to enable wireless communication via Bluetooth.

**Robotics & Programming Content:**

Level 1

- Motor testing station build
- Drag-and-drop programming in Cortex
- Basic and advanced motor commands: ON, ON FOR, SET PWR, REVERSE, THIS WAY, THAT WAY

Level 2

- RiQ robot build
- Programming robotic behaviors
- Miscellaneous programming commands: BEEP and WAIT

Level 3

- Logic commands: REPEAT and LOOP
- Subroutines, procedures, and calls
- Touch sensors and LEDs

Level 4

- Infrared and ultrasonic sensors
- Advanced logic commands: IF, IF ELSE
- Light sensors

**Assessment:**

- **Standard:** Appendix of content-based multiple-choice questions.
- **Continuum:** A second appendix of skill-based assessment rubrics and guidelines for implementation.

**Training:**

- Half hour free webinar training for purchases of \$500+
- One hour free webinar training for purchases of \$1000+
- Additional training available for purchase



# Alignments & Standards

## Common Core State Standards for Language Arts

- ELA-LITERACY.WHST.6-8.1.B Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
- ELA-LITERACY.WHST.6-8.1.E Provide a concluding statement or section that follows from and supports the argument presented.
- ELA-LITERACY.WHST.6-8.2.D Use precise language and domain-specific vocabulary to inform about or explain the topic.
- ELA-LITERACY.WHST.6-8.2.F Provide a concluding statement or section that follows from and supports the information or explanation presented.
- ELA-LITERACY.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical task
- ELA-LITERACY.WHST.6-8.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
- ELA-LITERACY.WHST.6-8.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

## Common Core State Standards for Math

- MATH.CONTENT.6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- MATH.CONTENT.6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
- MATH.CONTENT.6.EE.A.2.C Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
- MATH.CONTENT.7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions.
- MATH.CONTENT.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems.
- MATH.CONTENT.7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
- MATH.CONTENT.8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
- MATH.CONTENT.8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

## Next Generation Science Standards

- MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

## International Society for Technology in Education Standards

- Communication and Collaboration with a Digital Portfolio
- Creativity and Innovation
- Critical Thinking, Problem Solving, and Decision Making
- Research and Information Fluency