

VEX IQ Curriculum Syllabus

Grade Level: 2-8 (units and lessons specify specific grade level targets)

Curriculum Duration: Flexible, depending on school and classroom needs.
50-80 hours of instruction if all 12 units are taught.

Curriculum Content Access: <http://www.vexiq.com/curriculum>

Curriculum Description & Options:

With the growing societal need to enhance science, technology, engineering, and mathematics (STEM) instruction in classrooms and beyond, there is a call for integrated learning programs that allow teachers to engage students meaningfully in STEM, especially at the elementary and middle school levels. With that in mind, we have developed the VEX IQ Curriculum as a companion to the VEX IQ platform for elementary and middle school students. **This curriculum offers 12 flexible units of instruction that can be used in sequence, in chunks, or as standalone lessons. Whatever your elementary and middle school STEM education needs may be, the VEX IQ Curriculum is a learning tool that will excite and inspire your students.** For information on the programming options available, consult www.vexiq.com/programming.

Curriculum Resources Provided:

Curriculum Lesson Content – 12 units and associated resources

Teacher Materials – lesson plans and assessment tools

Standards Matching – STL, NGSS, and Common Core

Resources – user guides, assembly instructions, helpful tips, classroom printables

Curriculum Materials (see individual units for more details):

Unit Webpages

Paper & Pencils

Colored Paper Cards

Protractor

VEX IQ Kits, Controller, & Sensors

Internet Access / Resources

Unit Printable Handouts & Assessments

Teacher Resources & Standards Matching

Idea Book Pages / Engineering Notebooks

Cubes or other Objects to Manipulate (see units for details)

VEX IQ Programming Software

VEX IQ User Guides & Kit Documentation

Curriculum Outline:

Unit A: It's Your Future – Learn about STEM, engineering, and robotics

Unit B: Let's Get Started – Learn about VEX IQ, the Controller, and the Robot Brain

Unit C: Your First Robot – Build and test Clawbot IQ

Unit D: Simple Machines & Motion – Explore Levers, Pulleys, Pendulums, & more

Unit E: Chain Reaction Challenge – Design fun devices using Simple Machines

Unit F: Key Concepts – Explore and apply science and math that engineers use

Unit G: Mechanisms – Motors, Gear Ratio, Drivetrains, Object Manipulation & more

Unit H: Highrise Challenge – Build a challenge-ready teleoperated robot

Unit I: Smart Machines – Learn how sensors work and the basics of programming

Unit J: Chain Reaction Programming Challenge – Apply sensor and programming knowledge to automate fun devices

Unit K: Smarter Machines – Expand your knowledge of sensors and programming

Unit L: Highrise Programming Challenge – Build a challenge-ready autonomous robot

Sample Curriculum Paths:

A Complete VEX IQ Course of Study (50-80 Hours):

All 12 Units of Instruction

Unpowered Excitement (10-15 Hours):

Units A, B, D, E

Learning Through The Competition Experience (19-24.5 Hours):

Units B, C, H, L

STEM Essentials for Competition Robotics (27-35 Hours):

Units B, C, F, G, H, I, L

Focus on Mechanical Design (15.5-18 Hours):

Units B, C, F, G, H

Focus on Programming & Autonomy (23-45.5 Hours):

Units B, I, J, K, L

à la carte (time determined by teacher selection):

Pick and choose units & lessons to meet individual classroom needs.