

Weeks	STEM Lab/Activity	Title	Level	Description	Build	Programming?	Key Concepts
Week 1 (Introduction)	Activity	Can You Name that Part?	Beginner	Students will play a game with a partner to find parts of the VEX IQ (2nd gen) Kit, to help learn part names and types.	None	No	Introduction
	Activity	Get in Shape	Beginner	Students will use connectors to create different shapes from the pieces in the VEX IQ (2nd gen) Kit.	Free Build	No	Engineering
	Activity	Signs	Beginner	Students will create signs using pieces from their VEX IQ (2nd gen) Kit.	Free Build	No	Engineering
	Activity	Hang Out	Beginner	Students will use beams and plates to create a structure that extends the longest distance off of a desk.	Free Build	No	Engineering
	Activity	Pitch Pointillism	Beginner	Students will use VEX IQ Pitch Shafts to create a piece of original art.	None	No	Introduction; art
	Activity	Tread Art	Beginner	Students will use VEX IQ wheels to create a piece of abstract art.	Free Build	No	Introduction; art
	Activity	VEX Teasers	Beginner	Students will use VEX IQ (2nd gen) pieces to solve spatial reasoning brain teasers.	None	No	Spatial reasoning
Weeks 2 & 3	STEM Lab Unit	Tug of War	Beginner	Students will explore how mechanical advantage and center of mass affect the BaseBot's ability to pull objects, and design the best robot for the game of Tug of War.	BaseBot	Yes (VEXcode IQ)	Center of mass; mechanical advantage
Week 4	Activity	Get a Grip	Beginner	Students will test the grip of different VEX IQ (2nd gen) tires on an inclined plane.	Free Build	No	Friction
	Activity	Build a Wagon	Beginner	Students will create an addition to the BaseBot to carry an IQ Cube up an inclined plane.	BaseBot	Yes (VEXcode IQ)	Engineering
	Activity	Wheel Turns	Beginner	Use your VEX IQ wheels and a ruler to measure how far a wheel travels each time it turns.	None	No	Measurement, Circumference
	Activity	Drive Forward and Reverse	Beginner	Students will code their BaseBot to autonomously drive forward and backwards.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	How Big Are Your Teeth?	Beginner	Students will use the VEX IQ Parts Ruler to calculate the pitch of gears and sprockets.	None	No	Measurement
Weeks 5 & 6	STEM Lab Unit	Team Freeze Tag	Beginner	Students will drive the BaseBot using the IQ Controller, choose wheels, and add sensors to their robot to compete in the Team Freeze Tag competition.	BaseBot	Yes (VEXcode IQ)	Controller; sensors; programming
Week 7	Activity	Square Dance	Beginner	Students will code the BaseBot to drive in a square.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	Stop and Go	Beginner	Students will code their BaseBot to travel to different locations.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	To the Left, To the Right	Beginner	Students will code their BaseBot to turn left and right to navigate a path.	BaseBot	Yes (VEXcode IQ)	Programming
Week 8 & 9	STEM Lab Unit	Robot Soccer	Beginner	Students will explore how to use the Controller to drive their Simple Clawbot to grab, pass, and score the most points in a Robot Soccer competition.	Simple Clawbot	No	Engineering

Weeks 10 & 11	STEM Lab Unit	Cube Collector	Intermediate	Students will explore the difference between competing in a driver controlled and autonomous competition. They will use both autonomous and driver control in order to score cubes in the Cube Collector competition.	Clawbot	Yes (VEXcode IQ)	Controller, Programming, Game Strategy
Weeks 12 & 13	STEM Lab Unit	Up and Over	Intermediate	Students will explore how to design a Clawbot to collect, pick up, and move cubes from one side of the Field to the other, in the Up and Over competition.	Clawbot	Yes (VEXcode IQ)	Engineering
Week 14	Activity	Cube Pusher	Beginner	Students will code their BaseBot to drive and push cubes out of a square on the Field.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	Forward, Lift, Reverse	Beginner	Students will drive their Simple Clawbot to collect a cube, and test to see which direction is fastest.	Simple Clawbot	No	Controller
	Activity	Triple Transfer	Beginner	Students will drive their Simple Clawbot to move cubes to new locations.	Simple Clawbot	No	Controller
Weeks 15 & 16	STEM Lab Unit	Treasure Hunt	Intermediate	Students will build and code the Simple Clawbot with the Optical Sensor to recognize and collect red cubes to compete in the Treasure Hunt competition.	Simple Clawbot	Yes (VEXcode IQ)	Optical sensor; programming
Week 17	Activity	Cube Crasher Challenge	Beginner	Students will code their BaseBot to drive and knock down a stack of cubes.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	Cube Pusher	Beginner	Students will code their BaseBot to drive and push cubes out of a square on the Field.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	Golf Course Mower	Beginner	Students will code their BaseBot to navigate a "golf course" while avoiding the "sandpit" areas.	BaseBot	Yes (VEXcode IQ)	Programming
Weeks 18 & 19	STEM Lab Unit	Castle Crasher	Intermediate	Students will explore how to use the Optical and Distance sensors to seek, crash, and clear cube 'castles' to score points in the Castle Crasher Competition!	BaseBot	Yes (VEXcode IQ)	Distance sensor; Optical sensor; programming; algorithms
Week 20	Activity	Marker Maze	Beginner	Students will code their BaseBot to navigate a maze they create, without knocking over any objects along the path.	BaseBot	Yes (VEXcode IQ)	Programming
	Activity	Spin Your Wheels	Beginner	Students will calculate how fast the wheel on the BaseBot is spinning using data printed in a VEXcode IQ project.	BaseBot	Yes (VEXcode IQ)	Measurement; programming
	Activity	At a Distance	Intermediate	Students will code their BaseBot to navigate around a cube using the Distance Sensor.	BaseBot	Yes (VEXcode IQ)	Distance Sensor; programming
Week 21	Activity	1..2..3...Green Light	Intermediate	Students will create a VEXcode IQ project to control the behavior of a robot using the colored light from the Touch LED Sensor.	Free Build	Yes (VEXcode IQ)	Programming
	Activity	Magic Movement	Intermediate	Students will code their BaseBot to move using the Distance Sensor to detect when their hand is close to the robot.	BaseBot	Yes (VEXcode IQ)	Distance Sensor; programming
Week 22	Activity	Pinball Wizard	Beginner	Students will create a pinball game that includes simple machines, using VEX IQ pieces.	Free Build	No	Engineering
	Activity	Rubber Band Car	Beginner	Students will design and build a car powered only by a single rubber band.	Free Build	No	Engineering
Week 23	STEM Lab	M.A.D. Box	Beginner	Students explore how the mechanical advantages of torque and speed are related to gear ratios, where gear ratios can be found in daily life, and how they can be applied to their builds. There is a full investigation of calculating different gear ratios.	M.A.D Box	No (build only)	Engineering

Week 24	STEM Lab	Grabber	Beginner	Students will build a device that uses scissor linkages to convert the direction of motion and explore the mechanics of a scissor linkage.	Grabber	No (build only)	Engineering
Week 25	STEM Lab	Tallest Tower	Beginner	Students are asked to follow an Engineering process to build the tallest tower possible that can withstand a simulated earthquake.	Completed Earthquake Platform	No (exploring Device Info)	Engineering
Week 26	Activity Series	Testbed - VEX IQ Sensors	Beginner	Investigate how VEX IQ Sensors work and create a game using sensor feedback!	Free Build	Yes (VEXcode IQ)	Sensors
Week 27	STEM Lab	Drive Forward and Reverse	Beginner	Students will explore robot behaviors and create a project to drive the Autopilot robot forward and in reverse using VEXcode IQ Blocks.	Autopilot	Yes (VEXcode IQ)	Programming
Week 28	STEM Lab	Turning	Beginner	Students will explore robot behaviors and create a project for the Autopilot robot to turn using VEXcode IQ Blocks.	Autopilot	Yes (VEXcode IQ)	Programming
Week 29	STEM Lab	Changing Velocity	Beginner	Students will explore changing the velocity of the Autopilot robot while creating projects that drive the robot forward, move it in reverse, and turn the robot using VEXcode IQ Blocks.	Autopilot	Yes (VEXcode IQ)	Programming
Week 30	STEM Lab	Vision Sensor	Beginner	Students are asked to build and utilize an Autopilot robot that will detect objects using the Vision Sensor. Students will engage in configuring, tuning, and programming the Vision Sensor.	Autopilot	Yes (VEXcode IQ)	Engineering (using the Vision Sensor)
Week 31	STEM Lab	Movement Challenge	Intermediate	Students will program their Autopilot to drive on a designated path through a sequence of movements using VEXcode IQ Blocks.	Autopilot	Yes (VEXcode IQ)	Programming
Week 32	STEM Lab	Speedy Delivery	Intermediate	Students are asked to navigate a warehouse by programming the Claw and Arm of a Clawbot to grab and move packages to a loading dock for delivery.	Clawbot	Yes (VEXcode IQ)	Programming
Week 33	STEM Lab	Loop, There It Is!	Intermediate	Students are asked to complete several mini-challenges to experiment with using loops within their projects. This information will be used later in the "Groove Machine Challenge," where students will program robot movements to repeat, causing their robot to "dance."	Clawbot	Yes (VEXcode IQ)	Programming
Week 34	STEM Lab	To Do, or Not To Do	Intermediate	Students will explore conditional statements and how button presses can provide input for a program to decide if a conditional is true or false. They will also explore how a conditional statement can be looped, repeating a decision or executing a behavior.	Clawbot	Yes (VEXcode IQ)	Programming
Week 35	STEM Lab	Clawbot with Controller	Intermediate	Students will explore programming the Controller to maneuver the Clawbot. They will analyze different ways to program the Controller by running the example Clawbot Control example project and engaging in mini-challenges.	Clawbot	Yes (VEXcode IQ)	Programming
Week 36	STEM Lab	Full Volume	Beginner - Intermediate	Get started with the 2023-2024 VEX IQRC Full Volume game and the HeroBot, Byte! Students will build Byte, and use their HeroBot to begin to play Full Volume. Students will be introduced to using the Full Volume Game Manual, Driving Skills, and Autonomous Coding Skills, so that by the end of the Unit, they are prepared to compete in a Robot Skills Match.	Byte *Requires the IQ (2nd gen) Competition Kit	Yes (VEXcode IQ)	Competition