



Robotics 101

2025–2026

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AGE RANGE: 8–12

CLASS TIME & LOCATION: Multi-purpose Room | 2:30 p.m.

COURSE DESCRIPTION

Are you a parent interested in nurturing your child's creativity, problem-solving skills, and passion for technology? Look no further than Robotics 101, a specially designed course to introduce you to the exciting world of robotics and inspire the budding engineer in your 8-12-year-old.

In this engaging and informative course, you'll embark on a journey into the fascinating world of robotics alongside your fellow classmates. In this course, I will guide you through the fundamental concepts and hands-on activities that make robotics an ideal platform for learning and exploration. I can't wait to see what you come up with in this class!

EXPECTATIONS AND ACCOMMODATIONS

To receive maximum benefit from this course, each student is expected to attend class on a regular and consistent basis. Students need to: (a) arrive to class on time, and (b) be actively involved in class activities. Accommodations: We will work with each student to help achieve success in the course and adapt the activities to meet at functioning level. Please let the instructor know ahead of time of any specific needs.



REQUIRED MATERIALS

Please have students attend with a backpack, labeled water bottle, and materials listed in the "students should bring" section of the syllabus for each class. They will be required every class to have a notebook to write in, and either a folder or a binder to write in. I will have the bible verses on screen, but it is also highly recommended that they bring a physical bible to school as well to follow along.

COURSE OBJECTIVES

Taking my Robotics 101 course, students can expect to:

1. Introduction to Robotics - Gain a comprehensive understanding of what robotics is and its relevance in today's world.
2. Building Robots - Dive into the practical aspect of robotics as you and your child work together to construct simple robots using user-friendly kits.
3. Programming Robots - Learn the basics of programming to make your robots come to life. Discover how to control movement, sensors, and more.
4. Problem-Solving Skills - Foster critical thinking and problem-solving abilities in your child through robotics challenges and puzzles.
5. Real-World Applications - Explore how robotics is used in various fields, from healthcare to space exploration, and inspire your child's imagination.
6. Teamwork and Collaboration - Encourage teamwork and collaboration by working together on exciting group projects and challenges.

By the end of the course, the student will be able to demonstrate knowledge of the different parts of the robots used and the coding required to use them, by verbally identifying the parts and code with at least 90% accuracy by the end of the semester.



TENTATIVE Course Timeline

FALL WEEK 1 DATE: 9/5

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Intro to Robotics 101

OBJECTIVE: In this lesson, students will learn how to use the robotics kits, get familiar with their classmates, and experiment with different ideas

ACTIVITY: Learn how to use robotics kits, meet new people, and have fun!

FALL WEEK 2 DATE: 9/12

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Learn to Build

OBJECTIVE: In this lesson, students will learn how to use and build with the VEX GO pieces by first drawing out their creations on a piece of paper, and then making them!

ACTIVITY: Learn how to build with VEX GO pieces

FALL WEEK 3 DATE: 9/19

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Rescue Missions

OBJECTIVE: In this lesson, students will create different vehicles to rescue different trapped creatures!

ACTIVITY: Work as a team to build different rescue vehicles



FALL WEEK 4 DATE: 9/26

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: NASA Launchpad/Spaceship

OBJECTIVE: In this lesson, students will work as a team to build a NASA launchpad and spaceship!

ACTIVITY: Work as a team to build the NASA launchpad and spaceship

FALL WEEK 5 DATE: 10/3

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Astronaut Rescue

OBJECTIVE: In this lesson, students will rescue their trapped astronauts that they used last week

ACTIVITY: Work as a team to rescue the trapped astronaut

FALL WEEK 6 DATE: 10/17

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Inclined Plane

OBJECTIVE: In this lesson, students will learn the basics of how physics can affect their creations

ACTIVITY: Build a ramp that a wheel can roll down



FALL WEEK 7 DATE: 10/24

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Rubber Band Car

OBJECTIVE: In this lesson, students will continue with their physics knowledge by building a rubberband car

ACTIVITY: Build a car that moves with rubber bands

FALL WEEK 8 DATE: 10/31

SUPPLIES: Robotics Kits, Clock Face

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Clock

OBJECTIVE: In this lesson, students will learn about gears, how they work, and how they affect each other

ACTIVITY: Build a working clock that can tell time

FALL WEEK 9 DATE: 11/7

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Helping Hand

OBJECTIVE: In this lesson, students will create a claw grabber that uses rubberbands to complete various challenges

ACTIVITY: Build a claw grabber that can be used to do different things



FALL WEEK 10 DATE: 11/14

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Wind-up Car

OBJECTIVE: In this lesson, students will build a car that can be wound up and released to move

ACTIVITY: Create a wind-up car that demonstrates inertia and tension in a rubber band

FALL WEEK 11 DATE: 11/21

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Code Car

OBJECTIVE: In this lesson, students will learn the basics of how to program robots inside of VEX GO by creating a code car

ACTIVITY: Create a vehicle that moves with motors, gears, and code

FALL WEEK 12 DATE: 12/5

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Slingshot!

OBJECTIVE: In this lesson, students will use all of the skills and knowledge of simple machines that they have learned so far to create a mechanical slingshot that launches marshmallows! The team that can launch it the farthest will win!

ACTIVITY: Students will build a slingshot capable of launching a marshmallow, and compete with it to see which can launch it the farthest



SPRING WEEK 1 DATE: 1/16

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Recap of First Semester/Magnet Car

OBJECTIVE: In this lesson, students will get re-familiarized with the robotics kits and their fellow classmates, as well as building a car that moves with magnets!

ACTIVITY: Get familiar with kits and classmates. Build a magnet car that moves via magnets

SPRING WEEK 2 DATE: 1/23

SUPPLIES: Robotics Kits, Notepads

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Spirograph

OBJECTIVE: In this lesson, students will learn how to use motors, code, and gear ratios to make interesting and unique drawing patterns!

ACTIVITY: Build an electronically controlled spirograph that can be used to draw different patterns

SPRING WEEK 3 DATE: 1/30

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Self-Driving Robot

OBJECTIVE: In this lesson, students will learn how to build a remote-controlled vehicle, drive it through an obstacle course, and then code it to drive through the course autonomously!

ACTIVITY: Build a remote-controlled and code-powered vehicle



SPRING WEEK 4 DATE: 2/6

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Push-to-Start Vehicle

OBJECTIVE: In this lesson, students will learn how to create a vehicle that performs certain actions when a button is pressed on it!

ACTIVITY: Build a push-to-start vehicle and code it to perform certain actions when its button is pressed

SPRING WEEK 5 DATE: 2/13

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Sensor Controlled Vehicle

OBJECTIVE: In this lesson, students will learn how to make a vehicle that performs certain actions depending on what it sees through its sensor!

ACTIVITY: Build a sensor-controlled vehicle that reacts differently depending on what it sees in front of it

SPRING WEEK 6 DATE: 2/20

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Sensor Controlled Vehicle Pt. 2

OBJECTIVE: In this lesson, students will continue with what they learned from last week about sensors, but instead of sensing what is in front of the vehicle, it will instead sense what is below the vehicle!

ACTIVITY: Build a sensor-controlled vehicle that reacts differently depending on what it sees below it



SPRING WEEK 7 DATE: 2/27

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Mars Rover - Collect And Return Vehicle

OBJECTIVE: In this lesson, students will learn how to code their self-driving vehicles to travel to a specific point, collect data on that point, and return to their starting position!

ACTIVITY: Build a self-driving vehicle and code it to complete objectives on its own

SPRING WEEK 8 DATE: 3/13

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Robotic Arm

OBJECTIVE: In this lesson, students will learn how to create a robotic arm that can be used to move different items using an electromagnet!

ACTIVITY: Build a robotic arm mover and test it by picking up different things

SPRING WEEK 9 DATE: 3/20

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Robotic Arm Pt. 2

OBJECTIVE: In this lesson, students will use the robotic arms that they built last week to complete various different coding challenges!

ACTIVITY: Code a robotic arm mover to complete several different challenges



SPRING WEEK 10 DATE: 3/27

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Robotic Arm Sorter

OBJECTIVE: In this lesson, students will learn how to turn their robotic arm movers into a decision-making device capable of deciding an order in which to stack the items it collects!

ACTIVITY: Repurpose the robotic arm built over the last two weeks to make decisions on what it should pick up

SPRING WEEK 11 DATE: 4/10

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Design a Code Car

OBJECTIVE: In this lesson, students will demonstrate what they have learned about engineering throughout this course by working together to create a code car from scratch!

ACTIVITY: Design and build a code car from scratch

SPRING WEEK 12 DATE: 4/24

SUPPLIES: Robotics Kits

STUDENTS SHOULD BRING: Engineering Notebook/Paper, Binder/Folder, Pen/Pencil

TOPIC: Design a Code Car Pt. 2

OBJECTIVE: In this lesson, students will demonstrate what they have learned about programming throughout this course by working together to problem-solve and complete challenges by programming the car to do different things!

ACTIVITY: Program the code car from last week to complete different challenges