



# C o d e r Z <sup>TM</sup> CURRICULUM

## CODERZ IS AN ONLINE LEARNING ENVIRONMENT FOR STEM, CODING AND ROBOTICS

CoderZ is an innovative and fun learning platform for students worldwide to engage in robotics, computer science, and STEM to foster 21st century skills. Using simulated 3D virtual cyber robots, students learn Science, Technology, Engineering and Mathematics while engaging in challenging tiered missions that develop creativity, critical thinking, collaboration and an appreciation for technology.

### Educator Friendly

Teacher tools, curriculum, solutions, training and online help capabilities, enable teacher of all experience levels to introduce Robotics, STEM and Computer Science to their classroom.

### Robotics, Coding & STEM Education

Built to integrate and enhance STEM education, CoderZ combines curriculum, an interactive coding platform that engages students, and tools for educators into a powerful learning solution that promotes tech literacy and STEM careers.

- introduces novices and experts to robotics and coding
- equitable and online, in class or at home, every student gets their own robot.
- easy to deploy, maintain, manage and expand from class, to school to district.
- teacher guides, professional development, student tracking, progress tracking, heatmaps
- simulated realistic robot with life like physics.
- STEM curricula cover computer science, engineering, science and math through coding and robotics.

### Standards Alignment:

- Career Readiness Standard
- Computer Science Teachers Association (CSTA)
- Next Generation Science Standards (NGSS)
- Common Core Standards for Math Practice

# CoderZ Curriculum and Learning Programs

## Curriculum: Coding Robots

Length: 45 hrs of curriculum and practice

**Description:** Coding Robots introduces students to the concepts of Robots and Code. This comprehensive STEM program will teach your students the basics of mobile robots and how to operate them by programming.

Students learn to solve STEM problems through code, using math and engineering to overcome challenges.

### Skills Covered

- **Week 1 - What Are Robots?**  
What makes up a robot and basic operation using code.
- **Week 2 - Driving Lesson**  
Learn how to create and control the movement of robots by controlling its motors through basic code.
- **Week 3 - Navigation**  
Use geometry, math, encoders and loops to see how you can accurately navigate your robot and bring it home.
- **Week 4 - Sensors**  
Sensing what's around the robot and how to use this. Learn about controlling distance using optical sensors.
- **Week 5 - Control**  
Use two-state and proportional control to master your robot. Learn about ultrasonic and gyro sensors.
- **Week 6 – Visual sensors**  
Ready for variables, state machines and three-state controls. Use light sensors to follow lines and more.
- **Week 7 – Advanced Control**  
Overcome obstacles using advanced coding techniques and best practices. Tweak and tune code to perfection.
- **Week 8 – Advanced Sensing**  
Search for objects using scan techniques and remove them using a manipulator.
- **Week 9 - Conclusion**  
Put the skills learned to the test with tough challenges.

## Curriculum: Cyber Robotics 101

Length: 15 hrs of curriculum and practice

**Description:** Cyber Robotics 101 is a flexible learning program for educators to introduce students to the core concepts of code development and robotics.

Students will learn mechanics, navigation, sensors and more while being introduced to programming components like commands, variables, conditional logic, loops, smart blocks (functions) and more.

### Skills Covered

- **Session 1 - Intro to STEM and CoderZ**  
Overview of STEM and the CoderZ learning environment.
- **Session 2 - Basic Navigation I**  
Learn about drive systems and how to navigate your robot using computer code.
- **Session 3 - Basic Navigation II**  
More advanced navigation using computer code.
- **Session 4 - Object Detection I**  
Learn how to use the Robot's touch sensor for autonomous navigation using basic coding blocks.
- **Session 5 - Repeat Loops**  
Learn how to code more efficiently with the Repeat loop.
- **Session 6 – Gyro Turns**  
Make accurate turns using data from the Gyroscopic sensor.
- **Session 7 - Gyro Reset**  
Advanced Gyroscopic sensor use and use of reset gyro.
- **Session 8 - Domino Creations**  
Use all your creativity and imagination with all you've learned and take on a fun challenge that puts your skills to the test.
- **Session 9 - Challenge Missions I**  
Apply all you've learned so far and take on an advanced challenge that puts your skills to the test.
- **Session 10 - Object Detection II**  
Learn how to avoid obstacles by sensing them from afar using the Ultrasonic sensor.
- **Session 11 - Color Detection Sensor**  
The robot can detect colors on the floor and use them to make better decisions.
- **Session 12 - Challenge Missions II**  
More advanced challenges put students' skills to the test.
- **Session 13 - Object Manipulation**  
Control the robot's arm to interact with objects in the scene and solve complex challenges
- **Session 14 - Decision Making**  
Use the sensors so your robot can take informed decisions.
- **Session 15 - The Ultimate Challenge**  
Implement all you've learned in a series of complex challenges

## CONTACT US

For more information visit: [www.GoCoderz.com](http://www.GoCoderz.com)  
or contact us: [info@gocoderz.com](mailto:info@gocoderz.com)

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