



Ranger: The Secret Code



Introduction

The *Ranger: The Secret Code* Curriculum is divided into an Introduction, 7 Units, a total of 21 Missions, and the Secret Code Challenge. Each of the Units use the 5Es (Engage, Explore, Explain, Elaborate, Evaluate) model for teaching. Included at the end of each lesson slide deck are Rubrics for students to demonstrate learning outcomes. Additionally, Post-assessments and/or Handouts can be given to expand on topics discussed in the lesson. Activities are based on "Hands-On Minds-On" and discovery-problem based learning. Inquiry, curiosity, and understanding are the guiding force behind the overall structure.

The goal is to build 21st Century skills and an excitement for STEM. The expectations are an increase in the use of Computational Thinking applications for logical sequences, reasoning, and problem solving; Universal Skills for Discovery, Learning, and Innovation.

Teacher Resources

Instructor Guide →

The Instructor Guide includes:

- An overview of the Course
- A description of each Unit using the 5E model
- Objectives, Materials, Vocabulary, and Standards
- Troubleshooting Tips

Evaluation Forms →

We value your feedback. In an effort to continuously improve our services to better fit your needs, we have included an Evaluation form for each Unit to give you the opportunity to provide your feedback regarding your experience while implementing this course.

Unit	Time	Description	Lesson	Key Concepts	Resources
1	3 - 6 hrs	<i>What do we need to meet the mission?</i>	Unit 1	Engineering Notebook Teamwork	Handout Student Assessment Student Pre-Survey
		Mission 1 - Assemble the mBot Ranger			
2	4 - 6 hrs	<i>How do we control Ranger?</i>	Unit 2	Coding Movement Sequencing Rates of Change	Handout Simulation Worksheet Student Assessment
		Mission 2 - Communicate with Ranger			
		Mission 3 - Coding for Motion			
		Mission 4 - Complete a Map Test Run			
3	4 - 6 hrs	<i>What will your map look like?</i>	Unit 3	Engineering Design Process Coordinate Grid	Handout Engineering Design Student Assessment
		Mission 5 - Create the Playing Field			
		Mission 6 - Drive the Ranger Autonomously			
4	4 - 7 hrs	<i>How can we communicate with Beta?</i>	Unit 4	if/esle Statements Morse Code Music Sheets	Simulation Worksheet Student Assessment
		Mission 7 - How can we communicate with Lights?			
		Mission 8 - Sending messages with sound			
		Mission 9 - Creating Emergency signals			
5	3 - 6 hrs	<i>What sensors does Ranger have?</i>	Unit 5	Sensors Variables	Handout Student Assessment
		Mission 10 - Finding and Following Sources of Light			
		Mission 11 - Testing the Temperature Sensor			
6	4 - 7 hrs	<i>How can we get Ranger safely to Beta?</i>	Unit 6	Compass Directions Angles XY Coordinates Functions	Student Assessment
		Mission 12 - Navigating Uneven Surfaces			
		Mission 13 - Going to Coordinates			
7	4 - 8 hrs	<i>How can we detect a hazard while blindfolded?</i>	Unit 7	Autonomous Navigation Movement Control Function Parameters	Student Assessment
		Mission 14 - Investigate Ultrasonic sensor			
		Mission 15 - Detect a Hazard			
		Mission 16 - Investigate IR Sensor			
		Mission 17 - Following a Line			
8	3 - 7 hrs	<i>How can we find the Secret Code?</i>	Unit 8	Engineering Design Algorithms	Student Assessment Student Post-Survey
		Mission 18 - Test each Challenge			
		Mission 19 - Test Run Integrating activities			
		Mission 20 - Debug, Refine, Improve			
		Mission 21 - Find The Secret Code			

Contact us for Technical Support:

Call 760-650-2687 or

Email support@edfortech.com



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