

<p>Time Frame: 4-5 weeks (approximately 20-25 instructional days)</p>	<p>Unit Title: Introduction to Robotics and Engineering Principles</p>	<p>Course Name: STEAM</p>
<p>Stage 1 - Desired Results</p>		
<p>Established Goals</p> <p>What content standards will this unit address?</p> <p>Next Generation Science Standards (NGSS):</p> <ul style="list-style-type: none"> - MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution. - MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. - MS-ETS1-3: Analyze data from tests to determine similarities and differences among several 	<p>Transfer</p>	
	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> - Design and build a simple robotic prototype to accomplish a specific task, such as navigating a maze or picking up objects. - Develop a presentation showcasing the design process and functionality of the robotic prototype. - Participate in group discussions and peer evaluations to assess collaborative skills and understanding of key concepts. 	
	<p>Meaning</p>	
	<p>UNDERSTANDINGS</p> <p><i>Students will understand that....</i></p> <ul style="list-style-type: none"> - Robotics involves the design, construction, and programming of machines that can perform tasks autonomously or with human guidance. - Engineering principles provide a systematic approach to problem-solving, involving analysis, design, and iteration. - Collaboration and creativity are essential skills in robotics and engineering. 	<p>ESSENTIAL QUESTIONS</p> <p><i>Students will keep considering</i></p> <ul style="list-style-type: none"> - How can robotics and engineering principles be applied to solve real-world problems?

design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	<ul style="list-style-type: none"> - Robotics and engineering have applications in various fields, including manufacturing, healthcare, exploration, and entertainment. 	
	Acquisition	
	<p><i>Students will know...</i></p> <ul style="list-style-type: none"> - The design process, including brainstorming, prototyping, testing, and iterative improvements. - Programming Basics using block-based programming languages (e.g., Scratch, Blockly) and their application in robotics. - The proper way to document their design process, challenges faced, and lessons learned in a design journal. - How to tell a story in order to share their experiences and reflect on their understanding of robotics and engineering principles. 	<p>Students will be skilled at...</p> <ul style="list-style-type: none"> - Building basic robots with basic components (sensors, motors, microcontrollers). - Using basic programming software (Scratch, Blockly). - Identifying real-world applications of robotics. - Using journals or design notebooks for documentation. - Building using materials (cardboard, craft supplies, etc.) for prototyping. - Using the design process to solve real-world problems.