

Learning Grid

		Lessons			Extensions				Challenges			
		Lesson 1: Basic Chassis	Lesson 2: Ranger Bot Movement	Lesson 3: Ranger Bot Sensors	Line Follower	Arm & Gripper	Harvester & Transporter	Dispenser	Launcher	Creative Challenge	STEM Challenge	Competition Challenge
Technology (ITEEA Grades 9-12)												
The Characteristics and Scope of Technology:	Develop an understanding of the characteristics and scope of technology.											
	Understand that inventions and innovations are the results of specific, goal-directed research.											
The Core Concepts of Technology:	Understand that systems thinking applies logic and creativity with appropriate compromises in complex real-life problems.											
	Develop an understanding of the core concepts of technology.											
Apply the Design Process:	Understand and apply the design process.											
	Develop and produce a product or system using a design process.											
The Attributes of Design:	Understand that design needs to be continually checked, critiqued and improved.											
	Develop an understanding of the attributes of design.											
Energy and Power Technologies:	Select and use energy and power technologies.											
Engineering Design:	Develop an understanding of engineering design.											
Mathematics (NCTM Grades 9-12)												
Geometry:	Analyze characteristics and properties of two- and three-dimensional shapes and develop mathematical arguments about geometric relationships.											
Measurement:	Understand measurable attributes of objects and the units, systems, and processes of measurement.											
Numbers and Operations:	Understand meanings of operations and how they relate to one another.											
	Develop a deeper understanding of very large and very small numbers and various representations of them.											
Algebra:	Understand patterns, relations, and functions.											
	Analyze change in various contexts.											
Problem Solving:	Build new mathematical knowledge through problem solving.											
Connections:	Recognize and use connections among mathematical ideas.											
Communication:	Organize and consolidate mathematical thinking through communication.											
Data Analysis and Probability:	Formulate questions that can be addressed with data, collect, organize and display relevant data.											

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Science (NSTA Grades 9-12)												
Science as Inquiry:	Develop the abilities necessary to do scientific inquiry.											
	Design and conduct a scientific investigation.											
Physical Science:	Understand that all energy can be considered to be either kinetic energy, potential energy, or energy contained by a field.											
Science and Technology:	Understand the abilities of technological design.											
	Evaluate a solution and its consequence.											
	Understand that creativity, imagination, and a good knowledge base are all required in the work of science and engineering.											
	Identify a problem or design an opportunity.											
	Implement a proposed solution.											
	Communicate the problem, process, and solution.											
Engineering												
	Identify a need or problem.											
	Sketch a two-dimensional model.											
	Sketch a three-dimensional model.											
	Test and evaluate.											
	Redesign what has been created.											
	Model in two- and three-dimensions.											
	Understand that creativity, imagination, and a good knowledge base are all required in engineering.											
	Create a prototype to test a design concept and make necessary adjustments.											
	Meet design constraints.											