Unit #1
Stage 1 – Desired Results

NJCCCS: 8.2.8.C.1, 8.2.8.C.2 , 8.2.8.C.3, 8.2.8.C.4, 8.2.8.C.6, 8.2.8.D.1, 8.2.8.D.2, 8.2.8.D.3	**Unit/Big Idea:** Using Technology and STEM to build and use Lego-robotics to solve real world problems
Enduring Understandings: **Students will understand that…** The design process is an efficient way to solve a problem.	**Essential Questions:** Why is following the design process an essential part of solving a problem? How can following the design process help you solve a problem?

Students will know…		**Students will be able to…**	
The attributes of design.	8.2.8.C.1	Explain how different teams/groups can contribute to the overall design of a product.
	8.2.8.C.2	Explain the need for optimization in a design process.
	8.2.8.C.3	Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.
The application of engineering design.	8.2.8.C.4	Identify the steps in the design process that would be used to solve a designated problem.
The role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.	8.2.8.C.6	Collaborate to examine a malfunctioning system and identify the step-by-step process used to troubleshoot, evaluated, and test options to repair the product, presenting a better solution.
	8.2.8.D.1	Design and create a product that addresses a real world problem using a design process under specific constraints.

Apply the design process.	8.2.8.D.2	Identify the design constraints and trade-offs involved in designing a prototype (eg., how the prototype might fail and might be improved) by creating a design problem and reporting results in a multimedia presentation, design portfolio, or engineering notebook.
Apply the design process.	8.2.8.D.3	Build a prototype that meets a STEM-based design challenge using science, engineering, and math principles that validate a solution.

Stage 2 – Assessment Evidence

Required Performance Assessment:	**Other Evidence:**
You are a robotics engineer. Your role is to use the design process to build a robot and program it to accomplish a given task.	Design Process Evidence Robot Construction Evidence Robot Programming Evidence

Stage 3 - Learning Plan

Suggested Learning Activities:	
- Introduction to Programming [Multimedia presentation and online tutorial] - Reviewing the Design Process [Multimedia presentation and physical demonstration] - Building the Robot [Hands-on group (teams of 2-4) activity with online tutorial]	- Programming the Robot [Hands-on group (teams of 2-4) activity with online tutorial and note-taking] - Problem Solving with the Robot [Hands-on group (teams of 2-4) activity with online tutorial and note-taking]