LEGO Engineering
LEGGO Engineering Pre K-2 Workshop

In our popular LEGO engineering workshops, students work together to solve problems, use critical thinking skills, and work together in order to complete engineering challenges.

Activity includes:

1. **Engineering Design Cycle**: Students learn about and participate in the engineering design cycle, including planning their design prior to building.
2. **Building with LEGO**: Students will build a model LEGO structure according to a design problem such as bridge building.
3. **Testing and Iterating the Design**: Students will test their model builds, and rebuild as needed based on the test results.
4. **Additional Challenges**: For advanced students, they will be given additional challenges for their builds.

Supporting NGSS & Common Core Standards:

**K-2-ETS1-1 Engineering Design**
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

**K-2-ETS1-2 Engineering Design**
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

**K-2-ETS1-3 Engineering Design**
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

**CCSS.ELA-LITERACY.SL.K.6**
Speak audibly and express thoughts, feelings, and ideas clearly.

**CCSS.MATH.CONTENT.K.CC.A.1**
Count to 100 by ones and by tens.
LEGO Engineering 3-5 Workshop

In our popular LEGO engineering workshops, students work together to solve problems, use critical thinking skills, and work together in order to complete engineering challenges.

Activity includes:

1. **Engineering Design Cycle**: Students learn about and participate in the engineering design cycle, including planning their design prior to building.
2. **Building with LEGOs**: Students will build a model LEGO structure according to a design problem such as bridge building.
3. **Testing and Iterating the Design**: Students will test their model builds, and rebuild as needed based on the test results.
4. **Additional Challenges**: For advanced students, they will be given additional challenges for their builds.

Supporting NGSS Standards:

**3-5-ETS1-1 Engineering Design**
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

**3-5-ETS1-2 Engineering Design**
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

**3-5-ETS1-3 Engineering Design**
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
LEGO Engineering 6-8 Workshop

In our popular LEGO engineering workshops, students work together to solve problems, use critical thinking skills, and work together in order to complete engineering challenges.

Activity includes:

1. Engineering Design Cycle: Students learn about and participate in the engineering design cycle, including planning their design prior to building.
2. Building with LEGOs: Students will build a model LEGO structure according to a design problem including building a bridge that can withstand the weight and an earthquake simulation.
3. Testing and Iterating the Design: Students will test their model builds, record their data, and rebuild as needed based on the test results.
4. Additional Challenges: For advanced students, they will be given additional challenges for their builds.

Supporting NGSS & Common Core Standards:

**MS-ETS1-1 Engineering Design**
Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

**MS-ETS1-2 Engineering Design**
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

**MS-ETS1-3 Engineering Design**
Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

**MS-ETS1-4 Engineering Design**
Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
LEGO Engineering 9-12 Workshop

In our popular LEGO engineering workshops, students work together to solve problems, use critical thinking skills, and work together in order to complete engineering challenges.

Activity includes:

1. **Engineering Design Cycle:** Students learn about and participate in the engineering design cycle, including planning their design prior to building.
2. **Building with LEGOs:** Students will build a model LEGO structure according to a design problem including building a bridge that can withstand the weight and an earthquake simulation.
3. **Testing and Iterating the Design:** Students will test their model builds, record their data, and rebuild as needed based on the test results.
4. **Additional Challenges:** For advanced students, they will be given additional challenges for their builds.

Supporting NGSS & Common Core Standards:

**HS-ETS1-2 Engineering Design**
Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.