

**Honors Introduction to Engineering Design:  
Supply List:**

**You absolutely need a flashdrive!**

**1 inch 3-ring binder**

**loose leaf- lined paper**

**10 dividers**

**pencils**

**pens**

**colored pencils, basic colors**

**5 different colored sharpies, basic colors, med thick**

**inch and cm steel ruler**

**calculator with standard deviation functions**

**PLTW Engineering Notebook (you can buy one from me for \$3 in first week)**

**Summer Work 2017: Due: First day of class**

I. Watch and rewatch the video "The Modern Toymaker" at

<https://www.engineering.com/Search?q=the%20modern%20toymaker>

Answer the following questions:

1. What are 2 design challenges engineers face when designing toys?
2. List the safety criteria for toys.
3. What happens to the toys if they do not meet the safety criteria? Give one example.
4. How are toys tested?
5. List the tests and what they test for.
6. How do engineers design virtual toys?

II. Watch "Biomimicry: When Nature Inspires Design" at <http://www.engineering.com/Videos-old/ProductDesignChannel/VideoId/3283/Biomimicry-When-Nature-Inspires-Design.aspx>

1. Write a brief summary of how a fish and bone inspired a car design.

III. Read the article entitled " How a Playmobil Factory Pumps Out 100 Million Tiny People a Year " at <https://www.wired.com/2016/03/alastair-phillip-wiper-playmobil/>

Then watch and rewatch the video entitled "Making of the PLAYMOBIL Knights Castle"

at <https://www.youtube.com/watch?v=a4HLpdGnwpU>

1. List the steps involved in bringing an idea for a toy into a child's home.

**Honors Principles of Engineering:  
Supply List:**

**A Flashdrive!!!**

1 inch 3-ring binder

3 holed-lined paper

12 dividers

pencils

pens

steel ruler

calculator with sine, cosine, tangent functions

PLTW Engineering Notebook (you may already have one or you can buy one from me for \$3)

**Summer Work: Due first day of class.**

I. Watch the "Bridges of New York" documentary

at [https://www.youtube.com/watch?v=wMCuo\\_DwIlk](https://www.youtube.com/watch?v=wMCuo_DwIlk)

1. Which bridge do you travel over most often?
2. How do engineers use triangles in their bridge designs? Be complete and thoughtful in your answer. More research may be needed.

II. Watch the video "Robots at Work"

at <http://www.nytimes.com/video/science/1248068965210/robots-at-work.html>

1. How are robots used in the work place?
2. What are the robots features that make it so effective?

III. Explore the website of the Enabling the Future. Watch the video/videos

at <http://enablingthefuture.org/category/featured-stories/>

1. List the steps of development of the robotic arm.
2. Was Enables robotic arm design patented? Why?
3. Would you like to be part of the Enable the Future and the work they do?

IV. Watch the National Geographic Video "I Didn't Know That: How Rockets Work"

at <http://video.nationalgeographic.com/video/i-didnt-know-that/idkt-how-rockets-work>

1. If we made a rocket with only water under pressure to act as "fuel" how would it propel itself forward?
2. Which of Newton's Laws does this illustrate?

Bring this completed assignment to our first class in the fall to enable you to participate in our field trip. See you then! Have a great summer!

## Honors Civil Engineering and Architecture

### Supply List:

#### A flashdrive!!!!!!

1 1/2 inch 3-ring binder

loose leaf lined paper

10 dividers

pencils

pens

steel ruler

calculator with sine, cosine, tangent functions

PLTW Engineering Notebook (you may already have one or you can buy one from me for \$3.00)

### Summer Work: Due first day of class.

I. Watch a TED talk called “7 Missing Basics of Engineering”

on <https://www.youtube.com/watch?v=Rp9PfqUQ8a4>

What are the 8 things that today's engineers lack?

II. Watch another TED talk called “Ending poverty - what engineers can do: James Trevelyan at TEDxPerth”

on [https://www.youtube.com/watch?v=Nezlj\\_jrG20](https://www.youtube.com/watch?v=Nezlj_jrG20)

What can engineers do to eradicate poverty?

III. Watch [https://www.ted.com/talks/michael\\_murphy\\_architecture\\_that\\_s\\_built\\_to\\_heal](https://www.ted.com/talks/michael_murphy_architecture_that_s_built_to_heal)

What are the 4 pillars of Lo-fab? Give an example of it in use.

What has Michael Murphy learned about architecture and change?