**Engineering Design Process Notes – COMPLETED**

* What is it?
	+ A problem solving method.
	+ Engineers and technologist use design processes to find solutions to technological problems.
	+ Most products were probably developed using process like this one.
* Solution could be an…
	+ Innovation: Improving upon an existing process or product
	+ Invention: Creation of a product or process for the first time
* 6 STEPS arranged in a loop
	+ It is likely that you will move through the loop several times before solving a problem in the BEST way.
* **Step 1: Define the Problem**
	+ Design Brief: a written plan that identifies a problem to be solved, its criteria (desired specifications), and its constraints (limitations).
	+ Gather information
	+ Research how we can solve the problem.
	+ May want to consult an expert in the field or resources: library, books, magazines, articles, web sites, encyclopedias, research reports, etc.
	+ Make a written record of all the information gathered and cite the sources!
* **Step 2: Generate Concepts**
	+ ALL ideas should be written down, even the ones that seem unrealistic
	+ Ideas need to be down on paper in some way so they are not forgotten
		- written words
		- sketches
		- drawings
* **Step 3: Develop a Solution**
	+ Narrow down your list of ideas
	+ Choose the best option to pursue
	+ Use a decision matrix to choose a final solution
		- Decision Matrix: A tool used to compare ideas against one another using specific criteria
	+ A good way to design the solution is to create a series of sketches that increase in detail.
		- Thumbnail Sketches
		- Rough Sketches
		- Comprehensive Drawings
		- Technical Drawings
	+ Bill of Materials: list of materials needed to construct the solution (material, quantity, unit)
* **Step 4: Construct and Test Prototype**
	+ Prototype
		- Full-scale
		- Fully-functioning
		- Example of the final product
		- It is built to undergo testing before the product goes into full production.
	+ Model
		- Looks like the final product
		- NOT full-scale
		- NOT functional
	+ Test the solution!
	+ Record results
* **Step 5: Evaluate Solution**
	+ Evaluate the results
	+ What changes need to be made?
	+ Pursue an entirely different solution?
	+ Make minor change?
	+ Focus on making your solution better!
* **Step 6: Present Solution**
	+ Formal Report
	+ Slideshow Presentation
	+ Video
	+ Can vary based on audience