**Supplemental Assignment for Credit**

**EIN 3390 Manufacturing Processes**

**Summer 2018**

This is a voluntary assignment to help you with your Exam 1 grade. It will not hurt you if you do not submit it. This exercise is meant to introduce you to the concept of Bill of Materials, Product Decomposition, Manufacturability, Make or Buy decisions, etc. You may present this in a table format.

Select an old/broken appliance or consumer product you may have at home that you are no longer using. It does not have to be a complicated product. The product must have the following characteristics:

* Have multiple components assembled together.
* Made of different materials.
* Can have subassemblies.

**Deadline for submission: Thursday June 14, 2018 at the end of class, after the final exam.**

**Task 1: Create the Bill of Materials for the product**

**What is a Bill of Materials or BOM:** “A bill of materials is a list of all the materials, components, parts, and sub-assemblies needed to create a product. Essentially, you can think of a bill of materials as an **ingredient list** …for manufacturing an end product. A bill of materials is most commonly used in manufacturing or engineering projects to create physical products.. A manufacturing BOM (MBOM lists all the physical parts needed to successfully manufacture a product. It focuses… on the tangible parts and how they relate to each other. (1)

1. Take a picture of the assembled product.
2. Take a picture of the subassemblies (if any).
3. Take a picture of the disassembled product.
4. Take a picture of each component. If there are several of the same components, such as same sized screws, then take a picture of them together.
5. If the subassembly is a motor, no need to disassemble it unless that is the product you selected.

Now that you have the component inventory, you can start the BOM.

What to include in the BOM: usually it will cover the same basic information about each part or component needed to create the product. Information will include:

* **Product Name:** Name of the final product

For every component list the following, in a table format.

* **Part Name**: Name of the part or component
* **Part Number:** Assigned number for each part or component, making it easy to locate. Come up with a Part number if you don’t have one.
* **Description**: Short description of the part or component function so that the reader understands the need
* **Quantity:** List of unit quantities needed for each part/component.
* **Unit of Measure**: Appropriate metric for each part (for example, ea. for each, yards, cubic centimeters, or gallons if in bulk)
* **Part material** – what material is the component made of?
* **Supplier/Vendor:**
  + Here you will decide to make or buy: that is, make the product in house (assume you have a fabrication facility in your company capable of manufacturing that component) or you will buy it from a third party vendor.
  + If you decide to make the product in house: list the specific manufacturing process(es) that will be needed to produce the specific component. There may be several processes needed.
  + If you decide you will be buying the product, list the name of the vendor (look for a company online that can potentially supply it and include the link. A good example of this could be a motor.
* **Unit Cost:** Cost per unit of each part or component - including the unit cost - to scale your production should another order be necessary. You can estimate the cost for this exercise.
* **Total Cost**: Total cost of each component - calculated by multiplying the quantity by the unit cost

**Task 2: Create a product tree**. This is a diagram showing in graphical format how the product components go together. Here is a link to help you understand what a product tree looks like:

<http://www.deltagl.com/solidworksproducts.html>

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Sources:

(1) <https://www.smartsheet.com/free-bill-of-materials-templates>

<https://www.arenasolutions.com/resources/articles/creating-bill-of-materials/>

Video

<https://www.youtube.com/watch?v=im3WMGsX3e0>

[**https://www.smartsheet.com/free-bill-of-materials-templates**](https://www.smartsheet.com/free-bill-of-materials-templates)