IET330\_Dr. Ni Wang\_Spring 2015 (Due 2/3/15 11:59pm)

Individual Assignment 3\_Formulating a design problem

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1. Consider the design of a new pocketknife for hiking and champing
* Define three possible customer requirements (use verbs to express functions) (e.g., cuts easily)

-includes can opener

-has an easy grip handle

-has a safety lock on it so you can’t cut yourself easily

* Establish a reasonable set of importance weights for the three requirements

0.2-includes can opener

0.4-has an easy grip handle

0.4-has a safety lock on it so you can’t cut yourself easily

* Define at least one engineering characteristic to measure each of the requirements. Include units and limits

-can opener (yes/no)

-easy grip handle (contour)

-safety lock (yes/no)

* Use excel to sketch and label a customer satisfaction curve for each engineering characteristic. (submit your separate sheet of paper to instructor with your name and ID number)
1. Customer satisfaction curve for the price tag of a new automobile is shown below. Use your word to describe the customer requirement.

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 7,000 10,000 35,000 50,000 price ($)

 -Customers tend to prefer vehicles ranging from $20k to $40k.

1. A product design team is designing an improved flip-lid trash can such as that which would be found in a family kitchen. The problem statement is as follows:

Design a user-friendly, durable, flip-lid can that opens and closes reliably. The trash can must be lightweight yet tip-resistant. It must combat odor, fit standard kitchen trash bags, and be safe for all users in a family environment.

With this information, and a little research and imagination where needed, construct a House of Quality (HOQ) for this design project.

1. Find the following items for a battery (if you really want to do research on another product, feel free to change it)
2. Specification from a manufacturer’s website that include time-voltage curves

http://data.energizer.com/PDFs/l91.pdf

1. A commercial site that compares batteries from various manufacturers

http://www.batteryshowdown.com/

1. A research paper that discuss new materials for increasing battery life

http://www.nature.com/nnano/journal/v9/n8/full/nnano.2014.152.html

1. An application or selector guide that indicates how to select various battery sizes, based on life, space, power, temperature, and more.

http://www.diehard.com/battery-selector?intdhdp=dhd\_mid\_nav\_selector\_image