Project 1
Reverse Engineering an Energy Bar

Engineering an original solution to a problem can be daunting. It can even be hard to know where to start. One good way to start thinking about a problem is by finding out how others have tackled similar problems. One method of investigating solutions is reverse engineering. In the same way taking apart an engine can tell you how it works; reverse engineering can tell you how a product is put together.

In the second project of this course you will be asked to design a healthy, nutritionally balanced, food product. The bars you are about to receive are solutions to a similar design problem. Your group will be given a bar to reverse engineer (figure out how to manufacture a "clone" bar). By understanding why all the ingredients are in this product, you will be able to have a starting point as you think about creating your own product.

Project deliverables for this project include the following:

- Evaluate the nutrition label and with the ingredients. What does your bar provide? Is it a good source of nutrients? Vitamins, whole grains, etc? How do these ingredients and their chemical constituents affect the human body? This this bar good for human nutrition? What other things would consumers need to eat in their diet to balance out this product?

- Document the physical characteristics that are important properties to your product (ie. length, height, width, color – pictures, texture, taste, density, volume, mass)

    - Taste your bar AFTER you have collected all other data

- Process flow diagram. How would you make this product? What order would you put in the ingredients? How do the biomolecules in the ingredients interaction which one another? How does the processing steps affect these biomolecules and their interaction(s)? What specific equipment would you use? Try to include times/temperature/mass amount estimates. These don't have to be exact, but they should make sense. Draw a process flow diagram with appropriate inputs and conditions.

- Product improvements are always necessary. How could you improve this product? Does it taste good? Where is it lacking? List and describe areas that could be improved and what you would do to improve the product.

- List the hurdles or challenges that may come when improving the product.

The final project report will be due in Lab 6 on October 3, 2016. Due dates for the above project deliverables will be given weekly and will be due between now and the final due date.