**MEC 3040 *Take-Home Quiz* for Module 1: Introduction to bioenergy**

*Please note that you are welcome to type your answers into this document, save and submit it.*

**1.1: What is bioenergy?**

1. What assumptions are made in calling bioenergy a form of truly renewable and sustainable energy?
2. Give an example of each of these bioenergy conversion technologies:
   1. Thermal
   2. Chemical
   3. Biochemical

**1.2: Current & projected energy use**

1. How does US use of bioenergy compare to global use of bioenergy?

**1.3: Forms of bioenergy**

1. Give one example each of agriculturally derived first-, second- and third-generation biofuels and justify (explain) why your examples should be classified as first-, second-, or third generation.

**1.4: Bioenergy feedstock materials**

1. Why is transportation a critical factor in growth, harvesting, processing and transportation of bioenergy? Why is it less critical for fossil or nuclear fuels?

**1.5: Bioenergy co-products**

1. Many people use the terms co-product and byproduct interchangeably but they are not the same.
   1. Give definitions of each that clearly explain the difference.
   2. How can a byproduct become a co-product? Give a real or hypothetical example.

**1.6: Drivers of bioenergy development**

1. Why is (governmental) policy a critical driver of bioenergy development & implementation? Use a specific example(s) to illustrate your answer.

**1.7: Bioenergy debate**

1. What four phases of bioenergy are considered in life-cycle analysis?

**1.8: Is bioenergy sustainable?**

1. In your opinion, what are the biggest barriers to the sustainability of bioenergy? Why?

**1.9: Bioenery vs. food debate**

1. There is wide agreement that first-generation biofuels or bioenergy have impacted the availability of food. In your opinion, will second or third generation biofuels pose more of a threat to world food supplies? Why?