**Weekly Reflection - Week \_\_ Name\_\_\_**

*Course Objectives*

1. Explain the various microstructural characteristics that influence material properties and describe how the microstructure relates to specific properties. This includes microstructure at both the atomic and crystal scales.
2. Explain how physical and thermal processing is used to modify microstructure and how those modifications affect the material properties.
3. Use phase diagrams to predict microstructure composition as a function of material composition and temperature.
4. Use continuous cooling transformation (CCT) diagrams to predict the formation of microstructure in steel as a function of cooling rate.
5. Develop processing recommendations to design materials with a set of desired properties.
6. Select an appropriate material for a given application – with due consideration being given to all factors that influence material selection (including factors such as economics and environment).
7. Explain similarities and differences in microstructure behavior between different metals, and between different material categories (i.e. metal vs. polymer).
8. Explain and analyze common failure conditions in materials.

***Labs***

1 – Charpy Impact; 2 – Microscopy of Bolts; 3 – CW and Anneal; 4 – Carburization and Decarb; 5 – Precipitation Hardening of Aluminum; 6 – Tempering of Steels; 7 – Tensile Testing of Polymers; 8 – Rate and temperature effects on Polymers

In 300 words or less, submit a brief, reflective essay that addresses the 3 points listed below. Use this page to type and complete your essay

1. Connections between weekly topics (on-line lectures) and course objectives. Briefly explain how the current weekly topics relate to the overall course objectives.
2. Connections between the current week’s lab and current/past topics. Briefly explain how the current lab ties into current or past information presented in class.
3. Connections between the current week’s topics and past labs. Briefly explain how the current week’s topics might explain parts of previous labs conducted.

--------------------------------------Reflection Section -------------------------------------------------------