Week 6 – Proteins and Translation
Part I – Protein Structure
Learning Goal: Appreciate how the molecular structure of proteins relates to their diverse cellular functions.
After the pre-class assignments you should be able to:
- Discuss the four levels of protein structure and relate them to the function of a protein
- Define the term "denatured" as it relates to protein structure

By the time you take the second midterm you should also be able to:
- Evaluate how changes in particular amino acids of a protein may affect protein structure and function

Part II – Translation
Learning Goal: Understand the role of translation in protein synthesis and gene expression.
After the pre-class assignments you should be able to:
- Compare and contrast translation in prokaryotes and eukaryotes
- Describe the structure and function of the ribosome
- Explain the major events that occur during initiation, elongation, and termination of translation.
- Discuss the role of tRNA in the process of translation
- Explain the mechanism of protein trafficking and its role in protein localization inside or outside the cell
- Describe the role of the components of the endomembrane system as they relate to cellular function
- Recognize that not all proteins are translated on the RER.

By the time you take the second midterm you should also be able to:
- Define the term "open reading frame" as it relates to the translation of genetic information
- Predict how changing tRNAs or other components of the translation machinery could alter the process and products of translation
- Use a codon table to translate a nucleotide sequence into an amino acid sequence
- Determine the effects of silent, missense, nonsense, and frameshift mutations in a gene
- Interpret results from protein gels and how the results may have been impacted by changes at the DNA or RNA level
- Evaluate the consequences of adding a drug or inducing a mutation that alters protein trafficking through the endomembrane system
- Determine where a protein was translated based on its function and/or cellular location