Learning objectives – Ch 12: Alkenes II

- Reaction types:
  - Recognize and explain the difference between substitution, elimination, addition, and cleavage reactions.

- Reactions:
  - Know the names of the reactions.
  - Recognize the names and formulas of the reagents that are needed to perform each reaction, and be able to write them out.
  - Know what kinds of products are formed in each reaction, and be able to compare the products of related reactions.
  - Know what regioselectivity to expect from each reaction.
  - Know what stereochemistry to expect from each reaction.

- Products:
  - Be able to give the correct organic product(s) for a given alkene and a set of reagents, taking into account the substitution of the alkene to give the correct regioisomer, or a set of constitutional isomers.

- Mechanisms:
  - Write out the mechanisms of selected reactions, including all arrows and intermediates.

- Rearrangements:
  - Know what reactions produce carbocations.
  - Recognize carbocations that will rearrange, and be able to give the correct products when a rearrangement will occur.

- Synthesis:
  - Recognize what reaction(s) could be used to synthesize compounds of a given type.
  - Identify possible alkene starting materials for the synthesis of a specific compound.
  - After considering all alkenes and possible reactions, identify any that will give only the desired compound, and explain why other products will be formed in others.
  - When the stereochemistry of the product is given, identify the stereochemistry of the alkene that will give that product.

- Stereochemistry:
  - Analyze the products of a reaction to determine whether 0, 1, or 2 stereocenters were created.
  - Analyze products of a reaction to determine what stereoisomers will be created, and draw these products, taking into account the stereoselectivity of the reaction if necessary.
  - Recognize the existence of meso compounds among the products that will reduce the number of stereoisomers formed.
  - Explain why reactions usually give racemic mixtures of any enantiomers formed, and give conditions under which stereoselectivity may be observed.