CHEM 203 (0 or 1 credit): Synthesis Lab

Description: A laboratory course focusing on synthesis techniques in inorganic, organic and biochemistry. Emphasis is on mastery of techniques and analysis of experimental data. Prerequisite CHEM 202.

Course Goals and Objectives:

1. Develop skills related to running chemical reactions using standard biochemical, inorganic and organic methods
   a. Calculate and measure masses and volumes based on mole amounts to set up reactions
   b. Select and use appropriate glassware for reflux and inert atmosphere reactions
   c. Use biochemical methods such as cell transformations and liposome labeling

2. Be able to analyze reaction mixtures using NMR, IR, and Fluorescence spectrosopies
   a. Continue to develop spectral interpretation skills in IR, $^1$H- $^{13}$C-NMR as applied to crude reaction mixtures
   b. Introduction to $^{31}$P- and 2D-NMR
   c. Use fluorescence to identify labeled biomolecules

3. Understand basic principles of modifying reaction conditions
   a. Use literature search techniques to find reaction procedures
   b. Adapt literature procedures in terms of safety, environmental friendliness, scale, equipment and chemical availability

4. Effectively communicate results of chemical reactions and present clear arguments supporting the interpretation of results
   a. Write an American Chemical Society style results and discussion section
   b. Present a coherent argument that uses their data to support conclusions