

**California State Polytechnic University, Pomona**  
**CHM 422, Organic Synthesis, Dr. Laurie S. Starkey**

**Preparation for Midterm**

**Sample exams** can be found online (use QR code for Dr. Starkey's CHM 422 homepage).

**Answer keys** for the sample exams are also provided, so there are plenty of sample problems for you to work on (in addition to the **End-of-Chapter problems** from your textbook, Chapters 1-3). If you would like to review general Organic Chemistry reactions/transforms, there are three **review problem sets** (with solutions) from CHM 315, along with an **alkene addition reaction tutorial**. This quarter's **homeworks** and **quizzes** will also be worth studying. You will be allowed to bring **one page** of **hand-written notes** (a single 8 1/2" x 11" page; front and back) to use during the midterm.



**Midterm Topics** (note: there will be no IR, NMR spectroscopy)

- Oxidation and Reduction Reactions
- Protective Groups
- 1-Group Disconnections
  - alcohols
  - alkyl/aryl halides
  - ethers (Williamson)
  - thiols
  - amines
  - alkenes (Wittig)
  - alkynes
  - alkanes and alkylbenzenes
  - ketones/aldehydes (enolates, regiocontrol – decarboxylation)
  - carboxylic acids
    - derivatives: acid chloride, anhydride, ester, amide

**Types of Questions** (see Sample Exams)

- Predict the product
- Literature reaction scheme (provide missing structures and/or reagents)
- Transform given SM into desired product (short synthesis)
- Synthesis (multi-step, requires retrosynthesis)
- C-14 Synthesis (incorporate labeled carbon <sup>14</sup>C at indicated position)