

Final Exam Guide for Chem109C
(Kahn, Spring 2005)

Final will be held on Wednesday, June 8th, 7:30–10:30 PM in Chem1179.

Final will cover everything we have covered in the course. In addition to material mentioned in Midterm I and Midterm II guides, vitamin problems, and quizzes, I recommend that you focus on the following topics

Drug Discovery, Drug Design and Medicinal Chemistry

- Process of modern drug discovery

- Historically valuable sources of drugs

- Know names, medical use and sources of few important nature-made drugs:

- Morphine

- Ephedrine

- Vincristine

- Taxol

- Know names and use of few important man-made drugs:

- Acetylsalicylic acid

- Erythromycin

- Lovastatin

- Sildenafil

- Discovery of penicillin

- Discovery of benzodiazepines

- Ehrlich's contributions to rational drug discovery

- Goals and challenges of medicinal chemistry

- Pharmacophores and auxotrophic groups

- Modern sources of lead compounds

- Modern lead modification cycle

- Common approaches to lead modification

- Synthesis: traditional vs. combinatorial approach

- Split combinatorial synthesis of peptide libraries

- Identification of active compounds from a combinatorial library

- Tagged libraries

- Prodrugs, their utility

- Drug carriers

- Ways to create ester linkages for making prodrugs and attach carriers

Polymer Chemistry

- Natural polymers: proteins, nucleic acids, polysaccharides

- Valuable properties of polymers

- Step-growth polymerization: synthesis of polyesters

- Chain growth polymerization: synthesis of polyvinyls

- Radical polymerization, cationic polymerization anionic polymerization

- Chemistry of initiation, elongation, and termination steps

- Stereochemistry of polymers: isotactic and syndiotactic polymers