

Exam 3 will cover material from Chapters 2, 3, 4, 21 and 5 of the textbook, however not all parts of these chapters will be on this exam. Use the chapter outlines provided on the Organic Chemistry I syllabus website to help you focus on the specific material. The exam is not specifically cumulative, but the assumption is that you have learned and retained all material that was covered on the first two exams. **Material from the lab experiments "Extraction of Carvones from Spearmint and Caraway" and "Bromination/Debromination of Cholesterol" will also be on the exam.** The following is a summary of the material that will be on your third hourly exam.

Drawing Cyclohexanes	Identify and name (using IUPAC and common systems of nomenclature) cyclohexanes and substituted cyclohexanes, including cis trans designation and R, S designation in the name.
Chair Conformations of Cyclohexanes	Draw and interpret chair conformations of substituted cyclohexanes from wedge/dotted line structures; interpret stereochemistry, axial/equatorial positions. Draw wedge/dotted line from chair conformations. Identify and interpret 1,3-diaxial interactions. Conformational analysis, predicting relative stabilities of conformers, calculating relative percent of conformers
Cahn-Ingold Prelog Stereochemistry/ Optical Isomers	Identification of chiral carbon atoms Enantiomers & Diastereomers; Meso compounds: Identification/distinction; physical properties/stabilities Determination of absolute configurations using the Cahn-Ingold-Prelog method from both wedge/dotted line structures and Fisher projections Determination of D/L configuration of Fisher projections Allowed manipulations of Fisher projections Interconversion of Fisher projections and wedge/dotted line structures Understand optical rotation and applications
Fisher Method of Stereochemical Designation and Fisher Projections	Identification of sugars; ketoses, aldoses; Identification of Amino acids Fisher projections of sugars: D, L relationships; stereochemical relationships (diastereomers, enantiomers); Determination of D/L configuration of Fisher projections Allowed manipulations of Fisher projections Interconversion of Fisher projections and wedge/dotted line structures
General Features of Chemical Reactions	Understand the use of the curved arrow convention to describe reaction mechanisms Distinguish between addition, substitution, elimination and rearrangement reactions Understand Thermodynamic and Kinetic conditions Draw and interpret reaction energy diagrams for a given reaction, including reaction intermediates, transition states, reactants and products; identify the rate-determining step Predict thermodynamic and kinetic products from reaction energy diagram Define and identify Nu ⁻ , LG and E ⁺ in a reaction

Representative Old Exam Questions

Exam	Questions	Exam	Questions
F2003 Exam 2	2,4,5,8,9,13,18,19	F2001 Exam 2	2,7,11,15, 20
F2003 Exam 3	1,7, 9,11,12,14,20	F2001 Exam 3	3,5,6,8,10,12,14,16,18,21,22
F2002 Exam 2	1,5,7,10,13,16,19,21,22,23,24		
F2002 Exam 3	1,4,5,7,11,12,13,18,19,22		