

Chem 4540 Winter 2003 Course Review

Section I

- Role of enzymes as catalysts
 - Physical and chemical role
 - Thermodynamics and kinetics
- Enzyme nomenclature
- Enzyme assays
 - Types
 - conditions
 - How to measure activity
 - Practical considerations

Section II

- Enzyme kinetics
 - Derivation
 - Graphical analysis
 - Practical aspects for measuring
- Enzyme inhibition
 - Different types
 - Calculation of K_i values
 - Graphical analysis
- Multisubstrate reactions
 - Cleland convention
 - Reaction types
- Substrate binding
 - Derivation of one and two site models
 - Calculation of binding constants
 - Methodology for determination of binding constants

Section III

- Types of reaction mechanisms
- Active site investigation
 - Role of kinetic investigations
 - Detection of intermediates
 - Role of X-ray crystallography
 - Chemical modification reactions and applications
 - Enzyme engineering and design
- Specific enzymes
 - Case studies 1 – 5
 - Know and draw reaction mechanism
 - General details concerning structure and catalytic features

Additional Points

- You should be able to answer any of the question from Problems Sets 1 – 5
- Useful to remember a specific example (if applicable) for many of the principles discussed throughout the course
 - The example can be one given in the lecture notes or written on the board in class **or** from your personal reading or experience