

Tentative Chem 125 Schedule

Fall 2014

- Resources
 - *Chemical Structure and Properties Workbook*, available at bookstore
 - Online Text, *Structure & Reactivity* available at:
<http://employees.csbsju.edu/cschaller/srobi.htm>, Part I
 - Peer Tutor:
 - 125-04A: Casey Palmer, MW, 8-9, ASC 127
 - 125-05A, Talitha Burtis, MW, 6-7, ASC 121
 - Print copy of Text, *Structure & Reactivity*, (OPTIONAL) at bookstore
 - **Moodle**
<https://moodle.csbsju.edu/login/index.php>
 - **Sapling: online homework system (passcode)**
 - Go to <http://saplinglearning.com> and click "US Higher Ed" at the top right.
 - If you have Facebook account, you can use it to quickly create a SaplingLearning account.
 - Click the blue button with the Facebook symbol on it (just to the left of the username field). The form will auto-fill with information from your Facebook account (you may need to log into Facebook in the popup window first).
 - Choose a password and timezone.
 - Accept the site policy agreement, and click "Create my new account". You can then skip to step 5.
 - Otherwise, click the link "Create an Account". Supply the requested information and click "Create My Account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.
 - Find your course in the list:
 - Expand the subject, "General, Organic, and Biochemistry."
 - Expand the term (i.e Semester 1, Quarter 1). "Semester 1"
 - Click on the link that reads your course title. "College of Saint Benedict - CHEM125- Fall14"
 - You will be prompted to enter a key code (your section number). **02A**
 - Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments.
 - If you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor.

Monday, Aug 25th

- First-Day Overview of Class Structure
 - Group work and Pedagogical Theory (powerpoint)
 - Assign Groups
 - Develop Participation Guidelines
 - Atomic Structure
 - *Workbook*: 10-14
-

Tuesday, Aug 26th NO Faculty Tutorial, O'Connells Coffee Shop

Atomic Structure and Periodic Trends

Wednesday, Aug 27th

Preparation: Structure of Atoms

- **Read**: [Structure & Reactivity](#): AT1-5
- **Videos**:
 - Khan Academy video: Introduction to atoms (click for link)
- **Homework due**:
 - **Moodle**: *Chem Tutor*: 3.6, 3.7, 3.8
 - **Sapling Training Assignment: How to Complete Assignments**
 - Sapling HW – DUE 11 pm the night before!







In class: Structure of Atoms

- **Socrative Quiz (5 pts): Structure of Atoms**
- Isotopic Ratios and Mass Spectrometry
 - *Workbook*: 15, 17-19
- Summaries of Atomic Structure
 - *Workbook*: 16

Friday, Aug 29th

Preparation: Structure of Atoms

- **Read:** *Structure & Reactivity*: AT4
- **Videos:**
 - Video (Khan Academy): Orbitals (click for link) 
 - Video (Khan Academy): More on orbitals (click) 
 - Video (Khan Academy): Electron Configurations (link) 
 - Video (Khan Academy): Electron configurations of d-block elements (click for link) 
- **Suggested Practice Problems:**
 - *Structure & Reactivity*: AT2.1-2.6, 2.8, 2.10
The answers to the problems are in AT6
- **Homework due:**
 - **Moodle:** *Chem Tutor*: 3.4, 3.5, 4.1
 - **Group Assignment: Mass Spectrometry, Workbook: 20-22**
 - **Sapling: Atomic Structure**
 - **Sapling HW – DUE 11 pm the night before!**

In class: Structure of Atoms

- **Socrative Quiz (5 pts): Orbitals & Electron Configurations**
- Atomic Orbitals
 - *Workbook*: 23-24
- Electronic Configurations
 - *Workbook*: 25-28
- Summary of Electron Configurations, *Workbook*, 29-31

Monday, Sept 1st

Preparation: Properties of Atoms

- **Read:** *Structure & Reactivity: AT5*

- **Videos:**

- Video: Period Trends - Ionization Energy (click to link)



- Video: Periodic Trends of Electronegativity, Metallic Nature and Radii



- **Suggested Practice Problems:**

- [Structure & Reactivity: AT4.1-4.4](#)
The answers to the odd problems are in the end of the chapter!
- Summary of Electron Configurations, *Workbook*, 29-31

- **Homework due:**

- **Moodle:** *Chem Tutor: 3.10, 4.2, 4.3*
- **Sapling Training Assignment: Orbital Diagrams**

In class: Properties of Atoms

- **Socrative Quiz (5 pts): Periodic Trends**
- Periodic Trends (Core Charge, Atomic Radii, EN)
 - *Workbook: 32-34, 37-40*
- Applications of Periodic Trends, *Workbook*, 41

Tuesday, Sept 2nd 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Metallic Structure and Properties

Wednesday, Sept 3rd

Preparation:

- **Read:** [Structure & Reactivity: ME2-3](#)
- **Videos:**
 - Video: Unit cells and close packing (click for link)



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): AT5.1-5.15
 - Periodic Trends Summary, *Workbook*: 41
- **Homework due:**
 - **Moodle:** *Chem Tutor*: 1.3, 4.4
 - **Sapling:** **Electron Configuration & Periodic Trends**
 - **Group Homework:** **Periodic Trend Applications, *Workbook*, 34-35**



In class: Structure of Metals

- **Problem Solving Assessments #1: Atomic Structure and Properties**
- **Socrative Quiz (5 pts): Metal Packing**
- Metal Packing
 - (play-doh or metal packing kit)
- Unit Cells
 - *Workbook*: 46-54

Friday, Sept 5th

Preparation:

- **Read:** [Structure & Reactivity: ME1](#)



- **Videos:**

- Video: Metallic bonding (click for link)



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): ME1.1-1.3, 2.1-2.16, 3.1-3.15
- Sapling: **Visualization of Unit Cells Powerpoint**
- Metal Summary: *Workbook*, 58-59, 69

- **Homework due:**

- [Group Assignment: ME3.2, ME3.5, ME3.9, ME3.10](#)
- **Group Extra Credit: Packing Efficiency, Workbook: 55-57**



In class: Properties of Metals

- **Socratic Quiz (5 pts): Properties of Metals**
- Sea of Electrons, Alloys
 - *Workbook*: 60-68

Ionic Solids and Properties

Monday, Sept 8th

Preparation:

- **Read:** [Structure & Reactivity: IC1, IC2, IC5](#)
- **Videos:**
 - Video: Holes in unit cells and ionic unit cells (click for link)



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): ME1.1-1.3



- **Homework due:**
 - **Moodle:** *Chem Tutor: 4.5, 4.8, 4.9*
 - **Passport to Class: Ionic Compounds, Workbook: 77-79**
 - **Group Assignment: Metal Shear Strength, Workbook: 70-72**
 - **Sapling: Metal Packing**
 - **Extra Credit: Secrets of the Viking Sword (link on Sapling)**

In class: Structure of Ionic Solids

- **Short Problem Solving Assessment #2: Metal Structure and Properties**
- **Socrative Quiz (5 pts): Ionic Solids**
- Ionic Lattice, Interstitial Holes, Coordination Number and Geometry
 - *Workbook: 81-82*
- Practice Problems
 - *Workbook: 84-88*

Tuesday, Sept 9th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Wednesday, Sept 10th

Preparation:

- **Read:** [Structure & Reactivity](#): IC3, IC4
- **Videos:**
 - Video: Properties of ionic solids – view from beginning to 4:03



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): IC2.1-2.4, 5.1-5.2
 - Ionic Packing Summary: *Workbook*, 87
- **Homework due:**
 - **Moodle:** *Chem Tutor*: 4.6, 4.8
 - **Group Assignment: Predicting Packing, Workbook: 85-86 AND Structure and Reactivity, IC5.2**




In class: Properties of Ionic Solids

- **Socrative Quiz (5 pts): Properties of Ionic Solids**
- Lattice Energies, Melting Points, Solubilities
 - *Workbook*: 93-99
- Applications
 - *Workbook*: 100-109

Molecular Compounds: Bonding and Geometry

Friday, Sept 12th

Preparation:

- **Read:** *Structure & Reactivity*: IM1-5
- **Videos:**
 - Video: Common bonding patterns (click for link) 
 - Video: Lewis dot structures for water and ammonia (click for link) 
 - Video: Lewis dot structures for CO₂ and CH₃OH (click for link) 
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): IC3.1-3.4, IC4.1-4.6
 - *Chemical Structure & Properties*: Ch 5 Ionic Compounds, 5.10-5.13
 - Ionic Packing Summary: *Workbook*, 92
 - Concept Map of Atoms, Metals, Ionic Compounds, *Workbook*, 110
- **Homework due:**
 - **Moodle:** *Chem Tutor*: 5.1, 5.2, 5.3, 5.4, 5.5, 5.8
 - **Group Assignment:** Instructor Assign *Workbook*, 101-110
 - **Sapling:** Ionic Solids

In class: Structures of Molecular Compounds

- **Problem Solving Assessments #3: Ionic Compounds Structure/Properties**
- **Socrative Quiz (5 pts): Lewis Structures**
- Lewis Structures
 - Perspective Drawings, Geometries, *Workbook*: 115-121
 - Model Kits
- Charges
 - *Workbook*: 124

Monday, Sept 15th

Preparation:

- **Read:** [Structure & Reactivity](#): IM9, IM10
- **Videos:**
 - Video VSEPR theory (click for link)
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): IM2.2, IM3.2-3.4, IM4.3, IM5.1-5.4
 - Lewis Structure Summary, *Workbook*, 125-126
- **Homework due:**
 - **Moodle:** *Chem Tutor: 5.6*
 - **Group Assignment: Structure and Reactivity**
IM4.1, IM5.1, IM5.2, IM5.3



In class: Structures of Molecular Compounds

- **Problem Solving Assessment #4: Application Problem**
- **Socratic Quiz (5 pts): Lewis Structures**
- Finish Lewis Structures
- Lewis Structure Practice, *Workbook*, 122-123

Tuesday, Sept 16th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Molecular Compounds: Isomers, Stereochemistry, Conformers

Wednesday, Sept 17th

Preparation: Structures of Molecular Compounds

- **Read:** [Structure & Reactivity](#): IM8, IM12

- **Videos:**

- Video: Line drawings (click for link)



- Video: Isomers



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): IM9.2, IM10.1-10.6
- Lewis Structure Summary, *Workbook*, 125-126

- **Homework due:**




- **Moodle:** *Chem Tutor*: 9.1, 9.2
- **Sapling:** Practice Drawing Molecules
- **Sapling:** Training Assignment – How to Complete Drawing HW
- **Sapling:** Lewis Structures and Geometries

In class: Structures of Molecular Compounds

- **Short Problem Solving Assessments #5: Lewis Structures**
- **Socratic Quiz (5 pts): Line Drawings and Isomers**
- Line Drawing and Isomers, *Workbook*: 131-133
- Nomenclature and Functional Groups, *Workbook*: 134-140

Friday, Sept 19th

Preparation:

- **Read:** [Structure & Reactivity](#): SC3-5
- **Videos:**
 - Video: Enantiomers (click for link) 
 - Video: R/S Configuration (click for link) 
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): IM8.1-8.3, IM12.1-12.12 
- **Homework due:**
 - **Moodle:** *Chem Tutor: 5.10*
 - **Passport, Rotations/Chirality, Workbook: 145**
 - **Sapling: Isomers, Functional Groups and Nomenclature**

In class: Shapes of Molecular Compounds

- **Problem Solving Assessments #6: Functional Groups and Nomenclature**
- **Socrative Quiz (5 pts): Stereochemistry/Enantiomers**
- Stereochemistry (chirality, mirror planes, enantiomers)
 - *Workbook: 146-148*
 - Model Kits

Monday, Sept 22nd

Preparation:

- **Read:** [Structure & Reactivity](#): SC9, SC10, SC19
- **Videos:**
 - Video: Stereoisomers (includes meso compounds)(click for link)



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): SC4.1-4.4, SC5.1-5.3
- **Homework due:**
 - **Moodle:** *Chem Tutor: 9.5*
 - **Group Assignment, R/S designations, Workbook: 149**
 - Also available on **Sapling**

In class: Structures of Molecular Compounds

- **Socrative Quiz (5 pts): Stereochemistry/Diastereomers**
- Stereochemistry (Diastereomers and Meso): *Workbook: 150-151*
 - Model Kits

Tuesday, Sept 23rd 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Wednesday, Sept 24th

Preparation:

- **Read:** [Structure & Reactivity](#): SC6, SC7, SC10, SC14
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): SC9.4-9.5, SC20.10-SC20.13
 - Determining Isomers, *Workbook*, 158-159
- **Homework due:**
 - **Group Assignment: SC5.1-5.3**
 - **Sapling Training Assignment: Drawing Wedges/Dashes**
 - **Sapling Training Assignment: Advanced Drawing Tips**



In class: Structures of Molecular Compounds

- **Socratic Quiz (5 pts): Properties of Stereoisomers**
- Practice Stereochemistry
 - *Workbook*: 152, 158-159
 - Model Kits
- Properties of Chiral Compounds: *Workbook*: 155-156
 - Model Kits

Friday, Sept 26th

Preparation:

- **Read:** [Structure & Reactivity](#): CA1-5
- **Videos:**
 - Video: Conformations of Ethane Newman Projections
 - Video: Conformational Analysis of Butane
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): SC10.3-10.4
 - Isomeric Relationships Summary: *Workbook*, 157
- **Homework due:**
 - **Moodle:** *Chem Tutor*: 8.1, 8.2
 - **Sapling:** **Stereochemistry**



In class: Structures of Molecular Compounds

- **Short Problem Solving Assessments #7: Stereoisomers**
- Conformational Analysis of Acyclic Molecules
 - *Workbook*, 164-167, 169
 - Model Kits

Monday, Sept 29th

Preparation:

- **Read:** [Structure & Reactivity](#): CA6-10
- **Videos:**
 - Video: Chair Flips
 - Video: Monosubstituted Cyclohexane
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): CA3.1, CA4.1-4.3
 - Isomeric Relationships: *Workbook*, 157-161
- **Homework due:**
 - **Moodle:** *Chem Tutor: 8.3*
 - **Group Assignment:** **SC5.1-5.3**
 - **Passport:** **Workbook, 173**



In class: Structures of Molecular Compounds

- **Socratic Quiz (5 pts): Acyclic Conformations**
- Cyclic Conformations, *Workbook*, 174-176
 - Model Kits

Tuesday, Sept 30th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Wednesday, Oct 1st

Preparation:

- **Read:** [Structure & Reactivity](#): CA10, CA12
- **Videos:**
 - Video: Conformations of cyclohexane III (click for link)
 - Video: Conformations of disubstituted cyclohexanes



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): CA8.1, CA9.1-9.3
 - Conformational Summary, *Workbook*: 172, 191
- **Homework due:**
 - **Group Assignment: Chairs, Workbook, 192-193**

In class: Structures of Molecular Compounds

- **Socratic Quiz (5 pts): Cyclic Conformational Analysis**
- Drawing Cyclic Compounds and Calculating Strain
 - *Workbook*: 177-183
 - Model Kits

Friday, Oct 3rd

Preparation:

- **Suggested Practice Problems:**
 - *Structure & Reactivity*: CA10.1-5, CA11.1-11.2, CA12.1
 - Conformational Summary, *Workbook*: 168, 170-172, 187
- **Homework due:**
 - **Group Assignment: Chairs, *Workbook*, 192-193**
 - **Sapling: Conformational Analysis**

In class: Structures of Molecular Compounds

- Application of Stereochemistry and Conformation, *Workbook*: 188-197
- **Problem Solving Assessments #8: Conformations**

Tuesday, Oct 7th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Properties of Molecular Compounds: Intermolecular Forces

Monday, Oct 6th

Preparation:

- **Read:** [Structure & Reactivity](#): SP1, SP2, SP4-6, SP10



- **Videos:**
 - Video: Intermolecular forces (click for link)



- **Homework due:**
 - **Moodle: Chem Tutor: 5.9, 6.1, 6.2, 6.3**
 - **Group Assignment: Dipoles, *Workbook*, 202-206**

In class: Properties of Molecular Compounds

- Intro to IMF, *Workbook*, 207-211
- **Socrative Quiz (5 pts): IMF**
- Properties of Molecular Structures due to IMF
 - Packing, Phase Changes, Melting Points, *Workbook*, 212-226

Wednesday, Oct 8th

Preparation:

- **Read:** [Structure & Reactivity](#): SP7,8, 9 & 11
- **Videos:**
 - Video: Vapor pressure (click for link)
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): SP4.1-4.3, SP5.1-5.5, SP6.1-6.3, SP10.1
 - IMF Summary, Workbook, 227
- **Homework due:**
 - **Moodle:** *Chem Tutor: 6.4, 6.5*
 - **Sapling:** *Dipoles*
 - **Group Assignment:** *SP5.5, SP6.3, SP11.1*



In class: Properties of Molecular Compounds

- **Short Problem Solving Assessments #9: Simple IMF**
- Finish Intermolecular Forces: Solubilities, Boiling Points, Vapor Pressure, Viscosity, Surface Tension
 - *Workbook, 212-226*

Friday, Oct 10th

- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): SP7.4-7.9, SP8.1-8.2, SP11.1
 - Summary of IMF, *Workbook, 229*
- **Homework due:**
 - **Group Assignment, Instructor Assigned, Workbook: 228-239**
 - **Sapling: Intermolecular Forces**

In class: Properties of Molecular Compounds

- **Socratic Quiz (5 pts): IMF**
- Applications of Intermolecular Forces
 - *Workbook, 228-239*

Monday, Oct 13th and Tuesday, Oct 14th

Long Weekend

No Faculty Tutorial

Structure and Properties of Biomolecules: Intermolecular Forces

Wednesday, Oct 15th

Preparation:

- **Read:** [Structure & Reactivity](#): IB1-4

[Structure & Reactivity](#): SC8, 9, 11

[Structure & Reactivity](#): Cell tutorial



- **Videos:**

- Video: Carbohydrates: watch until 10:42 (click for link)



- Fisher Projections (Khan Academy)



- Video: Lipids (click for link)



- Video: Cell membrane (click



for link)

- **Suggested Practice Problems:**

- [Structure & Reactivity](#): IB4.1-4.3

- **Homework due:**

- **Group Assignment: Carbohydrates, Workbook: 245-248**

In class: Structure and Properties of Biomolecules

- Lipids
 - Workbook, 249-252
- Cell Membranes
 - Workbook, 253-257

Friday, Oct 17th

Preparation:

- **Read:** *Structure & Reactivity*: IB2, IM13, SC12-SC13

- **Videos:**

- Video: Amino Acid Structure (click for link)



- Video: Peptide bond (watch to 3:53) (click for link)



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): SC11.1-2

- [Structure & Reactivity](#): IB4.1-4.3

- **Homework due:**

- **Group Assignment:** Liposomes, *Workbook*, 258-262

- **Passport:** Amino Acids, *Workbook*, 263

- **Sapling:** Biomolecules (sugars, lipids)

In class: Structure and Properties of Biomolecules

- **Socratic Quiz (5 pts): Biomolecules 1**

- Proteins

- *Workbook*, 264-271

- Receptor Theory

- *Workbook*, 274-277

Monday, Oct 20th

Preparation:

- **Read:** *Structure & Reactivity*: IB3, CA13
- **Videos:**
 - Video: Nucleic acid hydrogen bonding (click for link)
- **Suggested Practice Problems:**
 - *Structure & Reactivity*: ISC12-1-12.7
 - *Structure & Reactivity*: IB2.1-2.8
 - *Structure & Reactivity*: IB1.1-1.7, IB2.1-2.8, IB3.1-3.3, IB4.1-4.3
 - Cholesterol in Membranes, *Workbook*, 258-262
 - Stereochem of Drugs, *Workbook*: 278-280
 - Protein-Small Molecule Interactions, *Workbook*, 285-288
 - Transmembrane Proteins, *Workbook*, 289-295
 - DNA Applications, *Workbook*, 298-299, 304-305
 - RNA Application, *Workbook*, 308
 - Biomolecule Summary, *Workbook*, 309
- **Homework due:**
 - **Group Assignment: Nanotube Channels, *Workbook*, 281-284**



In class: Structure and Properties of Biomolecules

- **Socratic Quiz (5 pts): Biomolecules 2**
- DNA/RNA
 - *Workbook*, 296-297, 300-303, 306-307

Tuesday, Oct 21st 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Structure and Properties of Network Solids

Wednesday, Oct 22nd

Preparation:

- **Read:** [Structure & Reactivity](#): NW1-4



- **Videos:**
 - Video: Network Solids



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): CA13.1-13.5
- [Structure & Reactivity](#): IB3.1-3.3
- Biomolecule Summary, *Workbook*, 301

- **Homework due:**

- **Group Assignment: Foldit!, *Workbook*, 273**
- **Sapling: Biomolecules (amino acids, proteins, DNA/RNA)**

In class: Structure and Properties of Network Solids

- **Socrative Quiz (5 pts): Network Solids**
- Network Solids
 - *Workbook*, 314-320

Friday, Oct 24th

Preparation:

- **Review:** Molecular Structures and IMF and Biomolecules
- **Suggested Practice Problems:**
 - *Structure & Reactivity*: NW1.1-1.4, NW3.1-3.3, NW4.1-4.5
- **Homework due:**

In class:

- **Problem Solving Assessments #10: IMF in Action (Cumulative)**

Structure and Properties of Coordination Compounds

Monday, Oct 27th

Preparation:

- **Read:** [Structure & Reactivity](#): Part III, CC1, CC5



- **Videos:**

- Video: Transition metal complexes (link)



- **Suggested Practice Problems:**

- [Structure & Reactivity](#) Part III: CC1.1

- **Homework due:**

- **Passport: Coordination Number & Geometry, Workbook, 338-339**
- **Moodle: Chem Tutor: 9.3, 9.4**

In class: Coordination Compounds

- **Socrative Quiz (5 pts): Structures of Coordination Compounds**
- Geometries, Lewis Structures and Metal Binding
 - *Workbook: 338-342*

Tuesday, Oct 28th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Wednesday, Oct 29th

Preparation:

- **Read:** [Structure & Reactivity \(Part III\)](#): CC3
- **Videos:**
 - Video: Oxidation State of Metals in Coordination Compounds
- **Suggested Practice Problems:**
 - [Structure & Reactivity \(Part III\)](#): CC3.1-3.5, CC5.1
- **Homework due:**
 - **Instructor Choice**



In class: Coordination Compounds

- Electron Counting in Coordination Compounds
 - *Workbook*: 343-348

Friday, Oct 31st

Preparation:

- **Read:** [Structure & Reactivity](#): SC2, SC17, SC18
- **Videos:**
 - Video: Isomers of Coordination Complexes (click for link)
- **Suggested Practice Problems:**
 - [Structure & Reactivity \(Part III\)](#): CC3.1, 3.3-3.7
- **Homework due:**
 - **Moodle:** *Chem Tutor*: 9.3, 9.4
 - **Group:** **electron counting**, *Workbook*, 346-348





In class: Coordination Compounds

- **Socratic Quiz (5 pts): Coordination Compounds (e- counts/isomers)**
- Isomers of Square Planar and Octahedral Compounds
 - *Workbook*: 349-353
 - Model Kits
- Applications
 - Coordination Compounds, *Workbook*, 360-368

Bonding in Molecular Compounds: Molecular Orbital Theory

Monday, Nov 3rd

Preparation:

- **Read:** [Structure & Reactivity](#): AT2-3, MO1
- **Videos:**
 - Video: Constructive and Destructive Interference (click for link) 
 - Video: Sigma and pi bonds 
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): SC18.1-18.2
 - Coordination Compound Summary, *Workbook*, 359
- **Homework due:**
 - **Moodle:** *Chem Tutor: 3.1, 7.1-7.4*
 - **Sapling:** **Coordination Compounds**
 - **Passport: Chemical Structure Types, Workbook, 373**
 - See MM1, MM8 for reference

In class: Intro to Molecular Orbital Theory

- **Short Problem Solving Assessment #11: Coordination Chemistry**
- **Socrative Quiz (5 pts): Wave Theory, sigma and pi bonds**
- Orbitals as Waves
- Constructive/Destructive Interference
- Sigma/Pi bonds
 - *Workbook: 374-380*

Tuesday, Nov 4th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Wednesday, Nov 5th

Preparation:

- **Read:** [Structure & Reactivity](#): MO2-7, MO11
- **Videos:**
 - Video: Molecular Orbitals for H₂, He₂, N₂ and O₂ (click for link)

- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): AT2.9, 3.1-3.4

- **Homework due:**
 - **Passport: MO Summary, Workbook, 363-364**



In class: Simple Molecular Orbitals

- **Socratic Quiz (5 pts): MO of Diatomics**
- Molecular Orbitals in Diatomics
 - *Workbook: 383-386*
- Simple Hybridized AO
 - *Workbook: 392-394*

Friday, Nov 7th

Preparation:

- **Read:** [Structure & Reactivity](#): MO14, IM6

- **Videos:**

- Video: Resonance Structures



- Video: Conjugation



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): MO3.1, MO6.1-6.6, MO11.1-2
- Simple MO, *Workbook*, 381-382, 387

- **Homework due:**

- **Moodle:** *Chem Tutor: 5.7*
- **Group Assignment: Diatomics, Workbook, 369**
- **Sapling: Molecular Orbitals**

In class: Structure of Conjugated Systems

- **Short Problem Solving Assessment #12: Intro to MO & Diatomics**
- Conjugation and Resonance
 - *Workbook*: 395-400

Monday, Nov 10th

Preparation:

- **Read:** [Structure & Reactivity](#): MO15
- **Videos:**
 - Video: Conjugated Alkene Orbital Systems



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): MO14.1-14.5, IM6.1-6.6
- **Homework due:**
 - **Group Assignment: ????**

In class: Structure of Conjugated Systems

- **Socratic Quiz (5 pts): Conjugation and Resonance**
- MO of conjugation, *Workbook*: 401-404

Tuesday, Nov 11th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Wednesday, Nov 12th

Preparation:



- **Read:** [Structure & Reactivity](#): MO16-17
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): MO15.1-15.3
- **Homework due:**

In class: Properties of Conjugated Systems

- Properties of Conjugated Compounds, *Workbook*: 406-408
- Application Problems, *Workbook*: 410-411

Friday, Nov 14th

Preparation:

- **Read:** [Structure & Reactivity](#): MO16-17
- **Videos:**
 - Video: Huckel molecular orbital diagrams (click for link) 
 - Video: Aromatic and antiaromatic compounds 
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): MO14.6, MO15.4
 - Conjugation Summary, *Workbook*, 409
- **Homework due:**
 - **Sapling: Hybridization, Resonance & Conjugation**
 - **Group Assignment: Conjugation Applications, 410-411**

In class: Structure and Properties of Aromatic Systems

- **Short Problem Solving Assessment #13: Conjugation and Resonance**
- Aromaticity, *Workbook*: 416-422

Monday, Nov 17th

Preparation:

- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): MO16.2, MO16.5, MO17.1-17.2
 - Aromaticity Summary, *Workbook*, 419
- **Homework due:**
 - **Passport: Determining Aromaticity, Workbook, 423**
 - **Group Assignment: Band Theory, Workbook, 441-451**
 - **OR UV, Workbook, 452-455**

In class: Structure and Properties of Aromatic Systems

- **Socratic Quiz (5 pts): Aromaticity**
- Aromaticity Applications, *Workbook*: 423-431
- Orbital Patterns, *Workbook*: 436-440

Tuesday, Nov 18th 6:30-8:00 pm Faculty Tutorial Session, O'Connell's Coffee Shop

Acids and Bases

Wednesday, Nov 19th

Preparation:

- **Read:** [Structure & Reactivity](#): AB1-6



- **Videos:**

- Video: Bronsted and Lewis Acid/Base Theory (click for link)



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): MO16.2, MO16.5, MO17.1-17.2

- **Homework due:**

- **Moodle:** *Chem Tutor*: 10.1, 10.2
- **Passport:** **MO Patterns**, Workbook, 436-440
- **Sapling:** **Aromaticity**

In class: Introduction to Lewis Acids and Bases

- **Short Problem Solving Assessment #14: Aromaticity**
- **Socratic Quiz (5 pts): Lewis Acid-Base**
- Lewis Acids & Bases and Arrows, *Workbook*, 456-459

Friday, Nov 21st

Preparation:

- **Read:** [Structure & Reactivity](#): AB6-9

- **Suggested Practice Problems:**

- [Structure & Reactivity](#): AB2.1, 3.1, 4.2-4.5, 6.1, 6.2, 6.3

- **Homework due:**

- **Moodle:** *Chem Tutor*: 10.3

In class: Introduction to Bronsted Acids and Bases

- **Short Problem Solving Assessment #15: Lewis A/B**
- **Socratic Quiz (5 pts): Bronsted Acid-Base**
- Bronsted Acid/Base and Arrows, *Workbook*, 460-465

Monday, Nov 24th

Preparation:

- **Read:** [Structure & Reactivity](#): AB10-13
- **Videos:**
 - Video: Inductive effect (click for link)



- Video: Effect of size (click for link)



- Video: Effect of resonance (click for link)



- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): AB 7.1, 8.1-8.4, 9.2
- **Homework due:**
 - **Passport: Acid Base, Workbook, 450-451**
 - **Sapling: Acid-Base Intro**

In class: Proton Transfers

- **Socratic Quiz (5 pts): Most Acidic Proton**
- Which Proton? How Easily?, 466-467
- Structural Features of Acidity, *Workbook*, 468

Tuesday, Nov 25th No Faculty Tutorial Session

Wednesday, Nov 26th –Nov 30th

Thanksgiving Weekend

Monday, Dec 1st

Preparation:

- **Read:** [Structure & Reactivity](#): AB14-17
- **Videos:**
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): AB11.1-11.3, 12.1-12.4, MO16.4
- **Homework due:**
 - **Group Assignment:** *“What’s the Most Acidic Proton?”*

In class: Proton Transfers

- Applications
 - *Workbook* 456-461, 470-475
- Basicity
 - *Workbook*, 476
- **Problem Solving Assessment #16: Proton Transfers**
- **Socratic Quiz (5 pts): Strength of Bases**

Tuesday, Dec 2nd 6:30-8:00 pm LAST Faculty Tutorial Session, O’Connell’s Coffee Shop

Wednesday, Dec 3rd

Preparation:

- **Read:** [Structure & Reactivity](#): AB9, 14

- **Videos:**

- Video: Predicting Products



- Video: Using pKa to Predict Direction



- **Suggested Practice Problems:**

- [Structure & Reactivity](#): AB9.2, 14.1

- **Homework due:**

- **Sapling: Structural Basis for Acid Base Chemistry**

In class: Equilibria

- **Socratic Quiz (5 pts): Equilibria**
- Introduction to Equilibria and Predicting Direction of Reaction
 - *Workbook* 478-480
- Leveling Effect
 - *Workbook* 481-483

Friday, Dec 5th

Preparation:

- **Read:** [Structure & Reactivity](#): AB15-18
- **Videos:**
 - Video: Acid-Base Extractions (click to link)
- **Suggested Practice Problems:**
 - [Structure & Reactivity](#): AB15.1-15.7, 17.1-17.6
- **Homework due:**
 - **Sapling: Acid-Base Equilibrium**



In class: Equilibria

- **Socratic Quiz (5 pts): Extractions**
- Applications of Acid-Base
 - *Workbook* 485, 490
- Acid-Base Extraction
 - *Workbook* 486-489
- Cumulative problems
 - Methane Monooxygenase, *Workbook*, 499-505
 - Amide Cumulative Problem *Workbook* 510-517
 - Nanoparticles for Drug Delivery, *Workbook*, 506-509

Monday, Dec 8th

Preparation:

- **Homework due:**
 - **Group Homework:** Electrophoresis, *Workbook*, 491-494
 - **Sapling: Acid Base of Biomolecules**

In class: Equilibria

- **Problem Solving Assessment #17: Application Problem**

Wednesday, Dec 10th

Study Day

- SALG
- Student Evaluations
- Practice for Final!
 - Multiple Choice Practice can be downloaded from Sapling
 - Extra Sapling Practice
 - Lookover PSAs, Homeworks
 - Do suggested problems from texts (answers are available)

Final Exam

8:15-10:15 Thursday, December 11th (Graham)

55 Multiple Choice Questions

CSB/SJU Final Exam Schedule:

http://www.csbsju.edu/Documents/Registrar/terms/144/144_FinalsSchedule.pdf