TEXTBOOK

There is no text available for this course, but notes will be supplied before class. Lectures will be supplemented with the primary literature. In addition, it is recommended that students have access to texts in the five disciplines of chemistry, analytical, biochemistry, inorganic, organic, and physical. The following recommended texts are on reserve in the Chem-Math library:


Objectives

This course has two main objectives. First, it is designed to provide all students that enter the graduate program in chemistry and biochemistry with a grasp and overview of the fundamentals of chemistry and biochemistry. At the end of the 1-year course all students should have the same minimum background in all areas of chemistry. Second, the course is interdisciplinary in nature. This should provide the student a better overall understanding of chemistry in the broadest sense, i.e., how the separate disciplines of chemistry are related to one another. It is hoped students taking the course will be better prepared to answer a given question using information from a broader knowledge base.
Teaching
As mentioned above, the course is meant to be interdisciplinary and will, as a result, require input from a variety of disciplines within chemistry and biochemistry for all subject areas. Consequently, although it is not anticipated that more than one person will lecture on any given day, others present can certainly provide input from other disciplines during a given lecture.

Exams
Faculty teaching in a given module will cooperate to develop exams that cover the material taught. Some modules will be shorter and the number of exams will depend on the number of lectures in a given module with an estimate of an exam per 11 lectures. Exams will emphasize application and integration of fundamental principles to specific chemical questions and will involve essay and/or problem solving. The hourly examinations will include material covered since the previous examination, but will also build on previously covered material. Make-ups for Hourly Exams will not be given without a medical excuse signed by your doctor. The Final Exam will be cumulative in nature.

Examinations will be held on Wednesday evening from 7-9 pm. Tentative dates for the exams are: Feb. 17/24, Mar. 24/31, and Apr. 21/28.
The Final Exam is scheduled for Monday, May 10; 8:00 - 10:00 AM

Homework
Homework assignments are due at the beginning of the class on the designated date. Due dates for homework will be given when homework is assigned. Late homework will not be accepted.

Course Grading

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Three Hourly Examinations</td>
<td>450</td>
</tr>
<tr>
<td>Homework</td>
<td>300</td>
</tr>
<tr>
<td>Final Exam</td>
<td>250</td>
</tr>
<tr>
<td>Total possible points</td>
<td>1000</td>
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Other Policies:

UNIVERSITY POLICY REGARDING REASONABLE ACCOMMODATION

The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the instructor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.
UNIVERSITY POLICY REGARDING CODES OF BEHAVIOR

Each student should acquaint her or his self with the University's codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on physical handicap. Students engaging in academic misconduct (including cheating, plagiarism, and any other action that may improperly affect evaluation) will be subject to sanctions in accordance with the Norman Campus Academic Misconduct Code. Grade sanctions could range from a zero for the specific assignment to an "F" for the course. University sanctions can be severe, i.e., expulsion from the University.

POLICY REGARDING CONTENT OF SYLLABUS

This syllabus is a guide. The instructor reserves the right to change any items contained in this syllabus. This includes, but is not limited to: course content, scheduled dates, and calculation of final grade.

Important Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>Jan.   20</td>
<td>First Day of Class</td>
</tr>
<tr>
<td>Feb.   17/24*</td>
<td>First Exam</td>
</tr>
<tr>
<td>Mar.  24/31*</td>
<td>Second exam</td>
</tr>
<tr>
<td>Apr.  21/28*</td>
<td>Third exam</td>
</tr>
<tr>
<td>May  7</td>
<td>Last Day of Class</td>
</tr>
<tr>
<td>May  10</td>
<td>Final Exam (8:00 am - 10:00 am)</td>
</tr>
</tbody>
</table>

* Tentative dates scheduled for Exams 1-3

Holidays

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 18</td>
<td>Martin Luther King Day</td>
</tr>
<tr>
<td>March 13-21</td>
<td>Spring Break</td>
</tr>
</tbody>
</table>
LECTURE TOPICS

Module 7. Electrochemistry and Spectroscopy (Prof. Taylor)
- Electron transfer processes
- Electrochemical reactions / cells
- Nernst Equation
- Combining half reactions
- Properties of electromagnetic radiation
- Principles of spectroscopic measurements
- Figures of merit for instrumental methods

Module 8. Separations (Prof. Taylor)
- Principles of chemical separations
- Solubility (precipitation)
- Extraction
- Chromatography

Module 9. Inorganic Chemistry (Prof. Ashby)
- Overview of the Periodic Table and Bonding Revisited
- Periodic Trends in Bonding
- Periodic trends in Acid-Base and Oxidation-Reduction Reactions
- Descriptive Chemistry: Groups 1, 2, and 13-18
- Descriptive Chemistry: Transition Metals (TM)
- Descriptive Chemistry: TM (continued), Lanthanides, and Actinides
- Werner-type vs. Organometallic Transition Metal Chemistry
- Main Group and Transition Metal Reaction Mechanisms
- Bioinorganic Chemistry

Module 10. Enzyme Mechanisms (Prof. Cook)
- Enzymes as Catalysts
- Reaction Strategy
- Transition State Theory in Enzyme Reactions
- Tools

Module 11. Metabolism and Regulation (Prof. Cook)
- Metabolic Pathways - Thermodynamics and Kinetics
- Organization of the Pathway
- Allosteric and Other Regulation