# CHEMISTRY 102A

**ASSIGNMENTS**

**WEEK 1**  
(January 17-20)

<table>
<thead>
<tr>
<th>Lecture: Tuesday</th>
<th>Discussion: Wednesday</th>
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</thead>
<tbody>
<tr>
<td>Topics:</td>
<td>Introduction, Classification of Matter, Significant Figures</td>
</tr>
<tr>
<td>Reading:</td>
<td>Zumdahl*, Chapter 1.1-1.2, 1.5, 1.9, Appendix A1.1</td>
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<td>Course Policy (accessed on our Chem 102A website)</td>
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<tr>
<td>Problems:</td>
<td>Zumdahl, Chapter 1: 19, 21, 28, 31, 33, 73, 75, 77, 79-81, 91</td>
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<tr>
<td>Review Questions</td>
<td>Zumdahl, Chapter 1: 1, 9</td>
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<table>
<thead>
<tr>
<th>Lecture: Thursday</th>
<th>Discussion: Friday</th>
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</thead>
<tbody>
<tr>
<td>Topics:</td>
<td>Measurements - Units, Significant Figures, Dimensional Analysis, Density, Dalton’s Atomic Theory</td>
</tr>
<tr>
<td>Reading:</td>
<td>Zumdahl, Chapter 1.3-1.6, 1.8; 2.1-2.4</td>
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<tr>
<td>Problems:</td>
<td>Zumdahl, Chapter 1: 23-25, 35, 36, 37(a,b,e,f), 41, 42, 49-52, 63-66, 71, 87, 98, 99</td>
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<tr>
<td></td>
<td>Chapter 2: 20, 33</td>
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<tr>
<td>Review Questions:</td>
<td>Zumdahl, Chapter 1: 4-7</td>
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<td>Chapter 2: 1(a,b)</td>
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</tbody>
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**WEEK 2**  
(January 23-27)

<table>
<thead>
<tr>
<th>Lecture: Tuesday</th>
<th>Discussion: Wednesday</th>
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</thead>
<tbody>
<tr>
<td>Topics:</td>
<td>Subatomic Particles, Isotopes, Nomenclature, Periodic Table</td>
</tr>
<tr>
<td>Reading:</td>
<td>Zumdahl, Chapter 2.4-2.8</td>
</tr>
<tr>
<td>Review Questions</td>
<td>Zumdahl, Chapter 2: 4-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lecture: Thursday</th>
<th>Discussion: Friday</th>
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</thead>
<tbody>
<tr>
<td>Reading:</td>
<td>Zumdahl, Chapter 3.1-3.5, 3.8-3.9; Handouts Book, p. 35</td>
</tr>
<tr>
<td>Problems:</td>
<td>Zumdahl, Chapter 3: 25, 33, 35, 41, 42, 61, 63, 71, 90, 95, 96, 119, 121, 131, 138</td>
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<tr>
<td></td>
<td>Zumdahl, Chapter 6: 41, 43(a,b)</td>
</tr>
<tr>
<td>Review Questions:</td>
<td>Zumdahl, Chapter 3: 1-4</td>
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</tbody>
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*Chemistry by Zumdahl & Zumdahl (Eighth Edition)*
WEEK 3
(January 30-February 3)

**Lecture: Tuesday**
Topics: Electromagnetic Radiation, Atomic Spectra, The Bohr Model, The Quantum Mechanical Model

**Discussion: Wednesday**
Reading: Zumdahl, Chapter 7.1-7.5
Problems: Zumdahl, Chapter 7: 20, 23, 32, 41-44, 53, 55, 60, 61, 63, 137-139
Review Questions: Zumdahl, Chapter 7: 1-3

**Lecture: Thursday**
Topics: Orbitals and Electronic Structure, The Periodic Table

**Discussion: Friday**
Reading: Zumdahl, Chapter 7.7-7.11
Problems: Zumdahl, Chapter 7: 26, 33, 68, 72, 74, 77, 78, 81, 83, 85, 87, 92-96, 124, 146
Chapter 8: 44
Handouts Book, p. 54: Problems at the bottom of the page
Review Questions: Zumdahl, Chapter 7: 6-8

WEEK 4
(February 6-10)

**Lecture: Tuesday**
Topics: Periodic Properties

**Discussion: Wednesday**
Reading: Zumdahl, Chapter 7.12-7.13, 8.4
Chapter 8: 21, 39, 49-51, 129
Review Questions: Zumdahl, Chapter 7: 9, 10
Chapter 8: 2

**Lecture: Thursday**
Topics: Introduction to Bonding, Lewis Structures, Nonoctets, Resonance

**Discussion: Friday**
Reading: Zumdahl, Chapter 8.1-8.3, 8.9-8.12
Problems: Zumdahl, Chapter 8: 15-17, 19, 24, 27, 33-35, 37, 38, 41, 46, 79-89, 92, 93, 133, 136
Handouts Book, p. 61: Complete the Lewis structures for the organic compounds listed on the bottom of this page.
Review Questions: Zumdahl, Chapter 8: 1, 5, 6
WEEK 5
(February 13-17)

**Lecture: Tuesday**  
Topics: VSEPR, Polarity  
Reading: Zumdahl, Chapter 8.2, 8.3, 8.13  
Problems: Zumdahl, Chapter 8: 20, 26, 105-115, 117-120, 127, 151  
Review Questions: Zumdahl, Chapter 8: 8-10

**Discussion: Wednesday**

**Lecture: Thursday**  
Topics: Hybrid Orbitals, Delocalization  
Reading: Zumdahl, Chapter 9.1, 9.5  
Problems: Zumdahl, Chapter 9: 6, 9, 11, 12, 16-22, 27, 28, 31, 57, 59, 61, 64, 79  
Review Questions: Zumdahl, Chapter 9: 1-4, 10

**Discussion: Friday**

WEEK 6
(February 20-24)

**Lecture: Tuesday**  
Topics: Catch-up and Review for Hour Exam I

**Discussion: Wednesday**  
Hour Exam I: 7:00 p.m. Wednesday, February 22 (location to be announced.)

**Lecture: Thursday**  
Topics: States of Matter, Intermolecular Forces and Physical Properties  
Reading: Zumdahl, Chapter 10.1-10.2, 10.8 (vapor pressure discussion only)  
Problems: Zumdahl, Chapter 10: 5, 10-14, 21, 25, 33, 35-39, 117, 128  
Review Questions: Zumdahl, Chapter 10: 1

**Discussion: Friday**
WEEK 7
(February 27-March 2)

**Lecture: Tuesday**
Topics: Formula Calculations - Percent Composition, Empirical and Molecular Formulas

**Discussion: Wednesday**

Reading: Zumdahl, Chapter 3.6-3.7

Problems: Zumdahl, Chapter 3: 26, 73-76, 80, 83, 84, 87, 88, 135, 137, 141, 163

Review Questions: Zumdahl, Chapter 3: 5, 6

**Lecture: Thursday**
Topics: Chemical Reactions, Stoichiometry - Mole and Mass Relations, Limiting Reagents

**Discussion: Friday**

Reading: Zumdahl, Chapter 3.8-3.11


Review Questions: Zumdahl, Chapter 3: 7-10

WEEK 8
(March 5-9)

**Lecture: Tuesday**
Topics: Solutions: Concentration Units, Electrolytes, Reactions in Solution

**Discussion: Wednesday**

Reading: Zumdahl, Chapter 4.1-4.6

Problems: Zumdahl, Chapter 4: 13, 15-19, 24, 29, 31, 33, 34, 37, 39, 43, 45, 47, 49-51, 53, 66*, 67*, 100

Review Questions: Zumdahl, Chapter 4: 1-7

*For Exercises 4.66 and 4.67, only give the balanced formula equations.

**Lecture: Thursday**
Topics: Solution Stoichiometry

**Discussion: Friday**

Reading: Zumdahl, Chapter 4.7-4.8

Problems: Zumdahl, Chapter 4: 20, 56, 57, 61, 63, 74, 75, 77, 93, 94, 97, 103, 109, 125, 128, 129

Review Questions: Zumdahl, Chapter 4: 8
WEEK 9
(March 12-16)

Lecture: Tuesday
Topics: Gases - P, V, T Relationships, Ideal Gas Law, Stoichiometry, Partial Pressures

Discussion: Wednesday

Problems: Zumdahl, Chapter 5: 23-26, 29, 41, 44, 48, 53, 55, 56, 65, 71, 75-77, 80, 81, 87, 89, 123, 124, 130

Review Questions: Zumdahl, Chapter 5: 1-5

Lecture: Thursday
Topics: Kinetic Molecular Theory, Real Gases

Discussion: Friday

Problems: Zumdahl, Chapter 5: 27, 30-32, 99, 101-104, 106

Review Questions: Zumdahl, Chapter 5: 6-10

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SPRING BREAK, MARCH 19-23
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WEEK 10
(March 26-30)

Lecture: Tuesday
Topics: Review for Hour Exam II

Discussion: Wednesday

HOUR EXAM II: 7:00 pm WEDNESDAY, March 28 (Location to be announced.)

Lecture: Thursday
Topics: Chemical Equilibrium

Discussion: Friday

Problems: Zumdahl, Chapter 13: 11-14, 21, 23, 25, 27, 29, 33, 35, 37, 38, 43, 44

Review Questions: Zumdahl, Chapter 13: 1-5
WEEK 11
(April 2-6)

**Lecture: Tuesday**
Topics: Reaction Quotient, Equilibrium Calculations, LeChatelier's Principle

**Discussion: Wednesday**

**Lecture: Thursday**
Topics: Introduction to Thermodynamics, Heat, Work, Internal Energy, First Law

**Discussion: Friday**

**WEEK 12
(April 9-13)**

**Lecture: Tuesday**
Topics: Enthalpy, Calorimetry, Hess’s Law, Standard Enthalpies of Formation

**Discussion: Wednesday**

**Lecture: Thursday**
Topics: Bond Energies, Entropy

**Discussion: Friday**

Review Questions: Zumdahl, Chapter 13: 6-10

Problems:
- Zumdahl, Chapter 13: 15-17, 19, 20, 28, 39, 41, 47-49, 51, 57, 59, 61, 63, 64, 67-69, 90, 92, 93

Review Questions: Zumdahl, Chapter 6: 1-4

Problems:
- Zumdahl, Chapter 6: 11, 13, 30-34, 39-41, 43, 46-48, 98, 101, 102, 116, 122

Review Questions: Zumdahl, Chapter 6: 5-9

Problems:
- Zumdahl, Chapter 6: 17-20, 49, 50, 54, 55, 59, 62, 64, 65, 69-71, 73, 74, 76, 78, 81, 83, 84, 96, 114

Review Questions: Zumdahl, Chapter 8: 4; Chapter 17: 1-3

Problems:
- Zumdahl, Chapter 8: 23, 63, 65, 66, 68, 69, 71, 73, 74
- Zumdahl, Chapter 17: 11, 16, 23, 27-29, 37, 38, 73, 84
WEEK 13  
(April 16-20)

**Lecture: Tuesday**
Topics: Free Energy

**Discussion: Wednesday**

Reading: Zumdahl, Chapter 17: 17.4-17.6

Problems: Zumdahl, Chapter 17: 30-32, 34-36, 39-41, 44-47, 50, 54, 55, 58, 75, 83

Review Questions: Zumdahl, Chapter 17: 4-6

**Lecture: Thursday**
Topics: Free Energy and Equilibrium

**Discussion: Friday**

Reading: Zumdahl, Chapter 17: 17.7-17.9

Problems: Zumdahl, Chapter 17: 20-22, 60, 61, 64, 65, 67, 69, 70, 77, 78, 80, 88-90, 93, 100

Review Questions: Zumdahl, Chapter 17: 7, 8, 10

WEEK 14  
(April 23-27)

**Lecture: Tuesday**
Topics: Catch-up and Review for Hour Exam III

**Discussion: Wednesday**

**HOUR EXAM III: 7:00 PM Wednesday, April 25 (Location to be announced.)**

**Lecture: Thursday**
Topics: Oxidation-Reduction Reactions: Review for Final

Reading: Zumdahl, Chapter 4.9, 18.1

Problems: Zumdahl, Chapter 4: 21, 79, 81, 83, 112
Zumdahl, Chapter 18: 20, 29

Review Questions: Zumdahl, Chapter 4: 9
Zumdahl, Chapter 18: 1

WEEK 15  
(April 30-May 2)

**Lecture: Tuesday**
Topics: Catch-up and Review for Final

**Discussion: Wednesday**

**FINAL EXAM for CHEM 102A: 7:00-10:00 pm Monday, May 7**