Chemistry 102 - General Chemistry I  
Summer 2006

Instructors

Course Director: Charity Flener  
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Email: flener@uiuc.edu  
Office Hours: Tuesday 1-2 pm, Wednesday 2-3pm  
AOL Screen Name: chariteach

TAs: See Course Website

Basic Course Information

Prerequisite:  
High school chemistry or equivalent, high school algebra and trigonometry or equivalent

Course Content:  
Chemistry is the central science. Learning chemistry enables you to grasp a molecular view of life, which then allows you to better understand the macroscopic world. After taking this course you should have a basic understanding of elements, atoms, bonding, acids, bases, pH, compounds, equilibrium, and gases. But most importantly, you will have a deeper appreciation for the world around you. This course fulfills the general education requirement for science.  
Note: You should also be enrolled in CHEM 103, the lab section of this course. If you are not enrolled, you need to contact Lauren Denofrio (denofrio@uiuc.edu)

Course Website: www.chem.uiuc.edu Click on Course Websites. Then Click on CHEM 102.

Important Dates:

First Day of Class: Monday June 11th, 2006  
Hour Exam I: Monday, June 26th, 2006 at 9:30am  
Hour Exam II: Thursday, July 13th, 2006 at 9:30am  
Hour Exam III: Wednesday, August 2nd, 2003 9:30am  
Final Exam: Friday, August 4th, 2006 from 8-10am

Chemistry Learning Center

The Chemistry Learning Center is located in 212 Chemistry Annex and is open from 9am to 4pm Monday through Friday. Teaching Assistants will hold office hours there and a large bank of computers will be available for you to use to complete your online homework. Supplementary textbooks and complete solutions guides are also available.
Course Materials: Available at a local bookstore

Required:
Scientific Calculator
Handouts for Chemistry 102 by Tom Hummel
Interactive Course Guide by Don DeCoste (to be passed out during class)

Optional:
Chemistry 102: Past Hourly Examinations, Fall 2003-Spring 2005

Bring to Class Everyday:
Zumdahl, Handouts booklet, Interactive Course Guide and calculator. We will use these often.

Course Format:
Lecture is scheduled Monday-Thursday at 10am. During the lecture, I will cover broad concepts. I encourage you to stop me during the lecture if you have a question. An optional review session will be held at 10am on specified Fridays in 202 Chemistry Annex (See course calendar). Discussion meets Monday - Thursday a week at 9am. During discussion, you will do group work and take quizzes discussing the previous day’s material.
To do well in this course, you need to attend the lecture and discussion sections. For each class period, you should give yourself at least 2-3 hours to study your notes and do homework. If you need assistance, you can always contact your TA or myself if you have any problems. You can also visit the Chemistry Learning Center in 212 Chemistry Annex.

Course Policies
This course will follow all guidelines set in the student code.
http://www.admin.uiuc.edu/policy/code/index.html

Attendance Policy:
Attendance at discussion and lecture will comprise part of your TA evaluation grade. Consistent attendance and active participation will be monitored by your TA (See Participation note below). You can not make up an exam unless the absence falls under official university excused absences.
Note: Attendance in class means that you come prepared and able to participate in lecture/discussion. You will need to briefly read about the topics covered in lecture and attempt the homework problem. Classroom disruptions will not be tolerated, and any course work missed due to a classroom disruption cannot be made up.

Cheating Policy: http://www.admin.uiuc.edu/policy/code/
This course abides by the guidelines set in the University of Illinois code. If you are suspected of cheating during an exam or quiz, we can move you to another part of the classroom. On the first offense, cheating results in an automatic zero for the assignment. The second offense results in automatic failure of the course. Plagiarism (i.e. copying homework or exam corrections from a buddy) is considered cheating.

Accommodations:
If you require special accommodations for the classroom or exams, please notify me as soon as possible so I have time to make appropriate arrangements. All accommodations will follow the student code.
Late Policy:
As an adult, you are expected to take responsibility for your actions, including deadlines. If you miss a homework assignment, you accept the consequences. Online homework deadlines are listed on the course website. These deadlines will not be extended except for university excused absences. All homework is available at least two weeks before it is due. If you know that you will be away the day a homework set is due, you are responsible for completing the assignment before you leave.

Active Learning
Chemistry is best learned when you actively use your mind to understand the concepts. Questions during discussion time will help you formulate your own understanding of chemistry. I cannot teach you chemistry but I can give you concepts and ideas to think about. Learning these concepts requires time and patience. Completing the daily homework and actively engaging in class discussion will help you succeed. The TAs and I will help you in any way possible, but you must put forth the effort to succeed.

Coursework and Grading

Written Homework:
You will be assigned daily homework assignments from Zumdahl. You do not need to turn in this homework but you must complete this homework in order to be prepared for class. Online homework is similar to the written homework. You can purchase a partial solutions guide from the bookstore. Complete solutions are available in the Chemistry Learning Center.

Daily Readings:
Daily readings from Zumdahl are listed in the course schedule. Please read these selections before coming to class. Use the book to help clarify topics covered in class.

Exams:
You will have three Hourly Examinations and one Final Examination. Examinations will be 20-30 multiple choice questions and possibly 2-3 short answer questions. You will be given 70 minutes to complete each hourly exam and 2 hours for the cumulative final exam. Examples of past exams can be found in the past hourly exams booklet available from the bookstore. Exam dates are given on the important dates section on page 1 of this syllabus. No make-up exams will be given without a university excused absence. You must submit a written excuse within 24 hours of the exam to make up the exam.

For the 3 hourly examinations, you will be given the chance to correct your mistakes to earn up to 1/3rd of the points you lost. So if you missed 30 points on an exam, you can receive up to 10 points for correcting the exam. You need to turn in your revisions by 10 am two days after the exam has been returned.

Participation:
You will be assigned group work in every discussion section. Active participation in group work will monitored by your TA and recorded as PART OF the TA evaluation grade.

Quizzes:
You will be given between 12 and 16 quizzes throughout the semester. Quizzes will be announced the day before and given during your discussion section. Scores will be recorded for the top 8 quizzes. Quizzes can not be made up.
Online Homework:

You will have weekly online homework assignments on LON-CAPA. A discussion board has been set up for each question. TAs and I will monitor discussion boards and provide insight when possible. You are encouraged to help each other complete the homework assignments. Your grades for online homework will be displayed after you submit the assignment. You can submit the assignment as many times as possible before the due date, only the last grade will be recorded. Deadlines for online homework are listed below.

- **LON-CAPA #1** - Due at 11:59pm on Sunday June 18th
- **LON-CAPA #2** - Due at 11:59pm on Sunday June 25th
- **LON-CAPA #3** - Due at 11:59 pm on Sunday July 2nd
- **LON-CAPA #4** - Due at 11:59 pm on Sunday July 9th
- **LON-CAPA #5** - Due at 11:59 pm on Sunday July 16th
- **LON-CAPA #6** - Due at 11:59 pm on Sunday July 23rd
- **LON-CAPA #3** - Due at 11:59 pm on Sunday July 30th
- **LON-CAPA #8** - Due at 8am on Wednesday August 2nd

Course Points

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Online Homework</td>
<td>90 points</td>
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<tr>
<td>Participation</td>
<td>30 points</td>
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<tr>
<td>Exams (3)</td>
<td>300 points (3 x 100 points each)</td>
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<tr>
<td>Quizzes (8)</td>
<td>80 points</td>
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<tr>
<td>Final Exam</td>
<td>300 points</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>800 points</strong></td>
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Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage of Points</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
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<tr>
<td>A-</td>
<td>90-92.9%</td>
</tr>
<tr>
<td>B+</td>
<td>88-89.9%</td>
</tr>
<tr>
<td>B</td>
<td>83-87.9%</td>
</tr>
<tr>
<td>B-</td>
<td>80-82.9%</td>
</tr>
<tr>
<td>C+</td>
<td>78-79.9%</td>
</tr>
<tr>
<td>C</td>
<td>73-77.9%</td>
</tr>
<tr>
<td>C-</td>
<td>70-72.9%</td>
</tr>
<tr>
<td>D+</td>
<td>68-69.9%</td>
</tr>
<tr>
<td>D</td>
<td>63-67.9%</td>
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<tr>
<td>D-</td>
<td>60-62.9%</td>
</tr>
<tr>
<td>F</td>
<td>59.9% or lower</td>
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Reading and Written Homework Assignments

* Reading assignments must be read before coming to class.
* Zumdahl refers to Zumdahl Chemistry 6th ed.
* Homework assignments need to be completed after class.

Week 1 (June 12-15)

Monday June 12th  Foundations
Read: Course Syllabus, Zumdahl Chapter 1
Know: Prefixes in blue in table 1.2 on page 9
Homework: Chapter 1: 1, 4, 8, 10, 18, 20, 26, 27, 31, 33, 35, 42, 43, 44, 57, 58, 63, 66, 67, 75

Tuesday June 13th  Chemical Laws and Atomic Structure
Read: Zumdahl Chapter 2
Know: Names of Elements 1-36, Names of polyatomic ions in Table 2.5 on page 67, Prefixes in Table 2.6 on pg 68, Names of Acids in Tables 2.7 and 2.8 on page 72
Homework: Chapter 2: 6, 8, 12, 22, 44, 49, 50, 59, 65, 66, 68, 70, 71, 75, 76, 77, 79, 80, 81, 82

Wednesday June 14th  Stoichiometry
Read: Zumdahl Chapter 3.1-3.5
Homework: Chapter 3: 4, 13, 16, 17, 19, 21, 23, 30, 33, 45, 51, 55, 58, 61, 68, 70

Thursday June 15th  Stoichiometry II and Solutions I
Read: Zumdahl 3.6-3.9, 4.1
Homework: Chapter 3: 5, 6, 72, 74, 75, 86, 89, 92, 94, 97, 100, 102, 107, 111, 113, 118

Week 2 (June 19-22)

Monday June 19th  Solution Stoichiometry and Chemical Equations
Read: Zumdahl 4.2-4.7
Homework: Chapter 4: 2, 10, 11, 12, 15, 18, 20, 24, 26, 29, 33, 37, 45, 72, 74, 76

Tuesday June 20th  Properties of Gases and Gas Laws
Read: Zumdahl 5.1-5.4
Homework: Chapter 5: 4, 9, 32, 40, 42, 45, 49, 54, 59, 66, 72

Wednesday June 21st  Kinetic Molecular Theory and Effusion
Read: Zumdahl 5.5-5.7
Homework: Chapter 5: 7, 23, 24, 73, 76, 77, 79, 81, 82, 106

Thursday June 22nd  Non-ideal Gases and Redox Equations
Read: Zumdahl 4.9-4.10, 5.8
Homework: Chapter 4: 6, 57, 59, 62, 64, Chapter 5: 19, 110, 111
Week 3 (June 26-29)
Monday June 26th                  Exam I - 9:30am
Review past quizzes and homework

Tuesday June 27th       Electromagnetic Radiation and Hydrogen
Read: Zumdahl 7.1 -7.3
Homework:: Chapter 7: 39, 40, 41, 42, 44, 48, 114,

Wednesday June 28th       Bohr Model of the Atom
Read: Zumdahl 7.4, 7.5
Homework: Chapter 7: 16, 52, 54, 55, 56, 57, 58, 115, 116, 126

Thursday June 29th       Quantum Mechanical Model of the Atom
Read: Zumdahl 7.5, 7.7 -7.8
Homework: Chapter 7: 2, 14, 20, 67, 68, 77, 82, 124

Week 4 (July 3rd-6th)
Monday July 3rd       Periodic Properties
Read: Zumdahl 7.10-7.13
Homework: Chapter 7: 3, 4, 10, 25, 27, 29, 85, 87, 89, 92, 94, 133

Tuesday July 4th       University Holiday
Catch up on Missed Assignments

Wednesday July 5th       Chemical Bonds
Read: Zumdahl 8.1-8.4, 8.7
Homework: Chapter 8: 1, 10, 13, 14, 17, 21, 23, 27, 32, 33, 38,

Thursday July 6th       Localized Electron Model
Read: Zumdahl 8.9- 8.12
Homework: Chapter 8: 12, 61, 62, 63, 64, 65, 66, 67, 70, 72, 100, 101,

Week 5 (July 10-13)
Monday July 10th       VSEPR
Read: Zumdahl 8.13
Know: All geometries and shapes found in the handouts book. pg...
Homework: Chapter 8: 77, 79, 80, 82, 83, 84, 85, 86, 87, 88, 91, 92, 93, 94,104, 114, 115, organic molecules in handouts book

Tuesday July 11th       Bonding - Hybrid Orbitals
Read: Zumdahl 9.1
Know: Orbitals that are predicted by VSEPR geometry.
Homework: Chapter 9: 5, 6, 11, 14, 15, 16, 17, 19, 20, 21, 24, 27, 28, 29, 47, 49 (ignore formal charge)
Wednesday July 12th  Intermolecular Forces, Vapor Pressure, and Phase Diagrams
Read: Zumdahl 10.1, 10.8 -10.9
Homework: Chapter 10: 3, 4, 7, 10, 12, 14cde, 15, 30, 36, 37, 38, 39, 87, 89, 93

Thursday July 13th  Exam II

Week 6 (July 17-20)
Monday July 17th  Equilibrium
Read: Zumdahl 13.1 - 13.3
Homework: Chapter 13: 2, 3, 4, 6, 9, 10, 11, 12, 17, 18

Tuesday July 18th  Equilibrium Calculations
Read: Zumdahl 13.5 -13.6
Homework: Chapter 13: 19, 20, 23, 26, 27, 31, 34, 36, 39, 42, 67

Wednesday July 19th  Le Chatelier's Principle and Heterogeneous Equilibria
Read: Zumdahl 13.4, 13.6-13.7
Homework: Chapter 13: 1, 14, 37, 57, 58, 60, 64, 72, 73, 79

Thursday July 20th  Introduction to Acids and Bases
Read: Zumdahl 14.1 - 14.3
Know: Strong Acids and Bases listed on pg.... of Handouts book.
Homework: Chapter 14: 2, 6, 13, 19, 20, 29, 30, 31, 34, 35, 36, 39, 40, 41, 43, 45

Week 7 (July 24-27)
Monday July 24th  Calculating the pH of Acids
Read: Zumdahl: 14.4-14.5
Homework: Chapter 14: 25, 37, 47, 48, 50, 54, 57, 59, 63, 70

Tuesday July 25th  Calculating the pH of Bases and Salts
Read: Zumdahl 14.6
Homework: Chapter 14: 26, 38, 71, 72, 73, 75, 77, 81, 87, 89, 91, 99, 107, 108

Thursday July 27th  Polyprotic Acids and Acid Strength
Read: Zumdahl 14.7
Homework: Chapter 14: 93, 94, 95, 96, 100, 101, 111, 113, 127, 129, 134, 135 (do not calculate pH), 147

Wednesday July 26th  Buffers
Read: Zumdahl 14.8, 15.1 -15.3
Homework: Chapter 14: 4, 8
Chapter 15: 3, 21, 23, 25, 27, 29, 31, 37, 41, 44, 48, 50
Week 8 (July 31 - Aug 2nd)
Monday July 31st  Titration Curves
Read: Zumdahl 15.4
Homework: Chapter 15: 4, 5, 16, 51, 53, 55, 63, 64, 112, 113, 115,

Tuesday August 1st  Acid Base Properties of Metal Oxides and Review
Read: Zumdahl 14.10
Homework: Chapter 14:117, 118

Wednesday August 2nd  Exam III

Thursday August 3rd  Reading Day
No Class - Review for Exam

Friday August 4th  Final Exam (8am-10am)