The University of Iowa  
Principles of Chemistry I  
Summer 2011

Professors:  
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Office: E433 CB  
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Dr. Dean Duncan  
Office: E325 CB  
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Teaching Assistants:  
Mitch Chilton (Discussion) and Emily Marugacz (Lab)

Course Objectives:  
1. Demonstrate proficiency in performing calculations involving conversions between different units of measurements and recognize the different components of matter.  
2. Identify the major classes of chemical reactions and to perform calculations involving reaction stoichiometry.  
3. Recognize the properties of gaseous substances, the elements of the kinetic-molecular theory and thermochemistry. Define the quantization of energy in connection to the structure of the atom including electron configuration and chemical periodicity.  
4. Distinguish between the different models of chemical bonding.  
5. Apply the VSEPR theory in identifying molecular geometries and their impact on molecular properties. Recognize the different intermolecular forces and their role in phase changes.  
6. Identify the types and properties of mixtures, and perform calculations involving the conversion between the different units of concentration. Write the mass action expression for a reaction, and identify the factors affecting the state of chemical equilibrium.

Lecture Attendance  
Lectures will be held Monday – Friday, 2:00 -2:50 PM in W268 CB (Friday Lecture time is tentative). Regular attendance is expected and is essential for performing well in this course.

Discussion Section  
Discussion Sections are a complement to lectures. Each section meets twice a week. Students ask questions and obtain problem-solving experience. Discussion Sections will meet starting Wednesday, June 15th and Thursday, Jun 16th.

Case Study  
Activities for credit are conducted during Case Study periods. Case Study is held on Monday 8:30 9:50 AM in W128 CB. The first case study will be on Monday June 11th.

Laboratory  
Experiment: Experiments provide students with hands-on experience concerning selected course topics.  

Lab sections will meet the first week of classes: June 05 (section 010) & June 06 (section 011) for safety training and safety quiz.  

Safety: Students must always comply with laboratory safety rules. Students must complete laboratory safety training and pass a safety quiz before they will be allowed to perform lab
experiments. If a student fails to comply with laboratory safety rules, the student will be asked to leave the laboratory and points will be deducted.

**Pregnancy:** Many chemicals pose potential hazards to a fetus or young child. Women who are pregnant, nursing, or who expect to become pregnant are strongly advised to consult with their physician about the hazards of possible exposure to chemicals used in this course. MSDS and other information are available.

**TA Office Hours**
Discussion and Laboratory Section teaching assistants (TAs) have scheduled office hours.

**Course Content**
- **Content:** components of matter, stoichiometry, chemical reactions, kinetic molecular theory of gases, thermochemistry, quantum theory, chemical periodicity, models of chemical bonding, molecular geometries, theories of covalent bonding, intermolecular forces, and chemical equilibrium.

**Course Materials**
- **Chemistry:** The Central Science, 12th edition, by T. L. Brown, H. E. LeMay, B. E. Bursten, C. J. Murphy, Pearson/Prentice Hall 2009 (required textbook)
- **MasteringChemistry Access Code** (required software)
- **Lab Notebook (w/ carbonless copy pages) and laboratory goggles** (required)
- **Case Study / Lab Experiment Manual (Posted on ICON)** (required)
- **Solutions to Exercises for Chemistry: The Central Science 11th ed. By Wilson** (optional)

**Course Websites (Lecture & Lab)**
Chem 4:011 − Iowa Courses Online (ICON) website URL = http://icon.uiowa.edu/
Use your Hawk ID and Hawk ID password to log in to ICON.

**Online Homework**
*MasteringChemistry* is an Internet-based software package that helps improve problem-solving skills and concept understanding. *MasteringChemistry* website: http://www.masteringchemistry.com/

**Course Administration**
Go to Ms. Jessica Alberhasky, Room E225 CB in the Chemistry Center (phone: 335-1341; e-mail: jalberha@iowa.uiowa.edu) for drop/add signatures, make-up laboratory and exam scheduling, course handouts, alternate textbooks, section changes, or tutor lists. Hours are M-F, 8:00-12:00 & 1:00-4:30.

**Special Needs**
Students with disabilities requiring modification of seating, testing, or other course arrangements should first contact the Office of Student Disability Services, 3101 Burge Hall (335-1462), and then go to Ms. Jessica Alberhasky, Room 231 CB (phone: 335-1341), jalberha@iowa.uiowa.edu. (See also: www.clas.uiowa.edu/faculty/teaching/classroom_p&p/disabilities.shtml)

**Complaints**
Complaints and appeals regarding this course, its instructors, or TAs can be filed with the Departmental Executive Officer at the Department of Chemistry administrative offices, Room 305 CB (335-1350).

**Academic Misconduct**
- The College of Liberal Arts & Sciences academic misconduct policy is available at: www.clas.uiowa.edu/students/academic_handbook/ix.shtml#1
  Academic misconduct may result in a grade reduction and/or other serious penalties.
- **Examinations:** You are expected to work alone. The instructors will employ statistical software to examine student answer sheets to identify copying on exams – cheating will not be tolerated.
- **MasteringChemistry (homework):** You are expected to complete your homework alone.
- **Laboratory:** Data collection is a group activity (2 or 4 students). All data is expected to be collected in the laboratory. Use of data not collected by the author of the report, use of data not acquired
during the lab period, and use of fabricated data will be considered academic misconduct. Case study, pre-lab, and lab questions may be discussed in groups, but must be answered individually.

**Policy of the College of Liberal Arts & Sciences**
This course is given by the College of Liberal Arts & Sciences. This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College of Liberal Arts & Sciences. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Liberal Arts & Sciences. Details of the University policy of cross enrollments may be found at: www.uiowa.edu/~provost/deos/crossenroll.doc

**Grading**
Semester grades will be based on four 1½ – hour unit exams, homework, Case Study / Laboratory work, and Discussion Section participation; plus & minus grades will be awarded.

- 4 Unit Exams = 60%
- Case Study & Lab Experiments = 20%
- MasteringChemistry homework = 10%
- Discussion Section participation = 10%

Total = 100%

**Laboratory Component Requirements and Make-up Information**
A passing grade in Chem 4:011 requires successful completion of the Case Study / Laboratory portion of the course. This means: *(i) you must receive at least 50% of the Case Study / Laboratory points, and (ii) you must complete at least five of the six laboratory experiments.* If a Case Study or Laboratory is missed owing to illness, family emergency, or other qualifying excuse, a “Laboratory Make-up Request Form” must be submitted to the Chemistry Center. **Makeup periods will be announced.** A course grade of Incomplete may be assigned if it is impractical to make up more than one excused laboratory absence.

**Examinations**
There are four 2-hour unit exams. Each of these exams will include a mix of multiple choice and free response questions. Students should bring a pen/pencil, their University ID, and a basic scientific calculator, to each exam. Room assignments will be announced in class and listed on the ICON Chem 4:011 website.

- Exam #1: Thursday, June 14, 5:00 - 7:00 PM – McBride Hall Aud – Chaps 1-3
- Exam #2: Thursday, June 28, 5:00 - 7:00 PM – McBride Hall Aud – Chaps 4, 5 & 10
- Exam #3: Thursday, July 14, 5:00 - 7:00 PM – McBride Hall Aud – Chaps 6, 7 & 15
- Exam #4: Thursday, July 28, 5:00 - 7:00 PM – McBride Hall Aud – Chaps 8, 9 & 11
Extra-Credit ACS comprehensive Exam Friday July 27th, 8:30 – 10:30 am (VAN, LR1)

Exams will not be re-scheduled to accommodate vacation or other travel plans.

**Make-Up Examinations**
If an exam is missed owing to an illness, family emergency, or other university recognized excuse, to qualify for a make-up exam, written documentation must be submitted to the Chemistry Center *no later than 3 days* after the missed exam.
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<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Lectures &amp; Exams</th>
<th>CS &amp; Lab</th>
<th>HW Due Date</th>
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<td>Course Introduction &amp; Ch 1</td>
<td>Safety Quiz</td>
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<td>Ch 2 – Atoms, Molecules, and Ions</td>
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<td>Ch 15 – Chemical Equilibrium</td>
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<td>Ch 9 – Molecular Shapes and Bonding</td>
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<td>America Chemical Society Comprehensive Exam (8:30 – 10:30 am, in VAN, LR1)</td>
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Guidelines for Lab Performance

Punctuality: Every 5 minutes results in a loss of 2 points thus >25 minutes -10 points
30 minutes late – cannot do lab unless a special permission is obtained from Dr. El-Maazawi or Dr. Duncan

Preparedness 1 – 3 questions or actions that show a lack of preparation for the lab – ½ point each (questions like “what should I do next?”)
For each additional question –1 point
(No points should be taken off for asking a safety related question)

Participation -1 point if only occasionally contributing to group activities
-2 point if contributing very little
-3 points if just standing there and not even giving suggestions.

Disruption -1 to 5 depending on how disruptive the student is (An example of this would be completely preventing a group from finishing by doing the experiment “his/her” way despite instructions from the TA)

Safety -0.5 point for each goggle reminder
-1 point for more serious safety violations (spilling chemicals, leaving an unattended Bunsen burner, etc)

Distribution of Lab Points:

1) 5 points for Lab Performance (see above)
2) 10 points for being on time and performing the lab activities in a proper manner.
3) 5 points for quality of results.
   a. Less than 10% from the correct value(s) – no loss of points
   b. Between 10 and 20% of the correct value – loss of 2 points
   c. 20% or more – loss of 4 points
4) 5 points for the discussion and conclusions section including answering the questions
5) 5 points for each case study activity
6) 5 points for each prelab activity
Teaching Policies & Procedures: Syllabus Insert

Administrative Home
The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Student Academic Handbook.

Electronic Communication
University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (Operations Manual, III.15.2. Scroll down to k.11.)

Accommodations for Disabilities
A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Fraud
Plagiarism and any other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the departmental DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the departmental level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Academic Fraud section of the Student Academic Handbook.

CLAS Final Examination Policies
Final exams may be offered only during finals week. No exams of any kind are allowed during the last week of classes. Students should not ask their instructor to reschedule a final exam since the College does not permit rescheduling of a final exam once the semester has begun. Questions should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

Making a Suggestion or a Complaint
Students with a suggestion or complaint should first visit the instructor, then the course supervisor, and then the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Student Academic Handbook.

Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather
In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety web site.

*These CLAS policy and procedural statements have been summarized from the web pages of the College of Liberal Arts and Sciences and The University of Iowa Operations Manual.