



General Chemistry  
Syllabus  
Fall 2008



<u>Lecture Instructor</u>	<u>Responsibilities</u>	<u>Office Number</u>	<u>Office Hours</u>	<u>Email Address</u>
Dr. Jeremy Ramsey	Lecture, Recitation	232 Heim 321-4103	Just stop by or make an appointment	ramsey@lycoming.edu

### Course Description

The material presented in this course covers the fundamental principles of chemistry. Topics to be covered include models of atomic structure, stoichiometry, gas laws, thermochemistry, basic quantum theory, chemical bonding, molecular shape, and intermolecular forces. The concepts presented will be used to understand the chemical nature of the major classes of matter—solids, liquids, and gases.

We will perform a large number of calculations this semester, but it is not just important to be able to get the right answer. You should also understand why you performed the particular calculation and how it relates to the theory of the chemical problem that you are studying. Because of this, it may be necessary for you to understand why something happens before beginning a calculation. This is a source of frustration for many students as they are used to memorizing how to solve a problem and being evaluated using almost identical problems during an exam or quiz. As with all learning, some memorization will be necessary, however, methods involving straight memorization will not be as effective for much of this class. You should strive to adapt your learning method toward understanding what you are doing as opposed to just memorizing a necessary series of steps to complete a problem.

One of the goals that I have for this semester is to introduce you to the fundamental principles of chemical systems, and I have dedicated myself to helping you reach this goal. The motivation, however, must begin with you. The material in this course will be challenging and requires a lot of hard work for its mastery. A wealth of opportunities exists to assist you with your studies so please take advantage of them. If you do, I am confident that we can both achieve our goals for the semester.

### Learning Objectives

Upon completion of the lecture portion of this course, you should be able to

- Demonstrate an understanding of the fundamental properties of chemical systems including atomic structure, molecular structure, stoichiometry, thermochemistry, quantum theory, and chemical bonding
- Demonstrate how the state in which matter exists (solid, liquid, gas) is related to its chemical properties and reactivity
- Use mathematical calculations to describe chemical systems and their behavior
- Discuss chemical problems using proper vocabulary

### Prerequisite

- Math 100 (credit for or exemption from)

### Meeting Times

Lecture	MWF	11:30 am to 12:20 pm	G09 Heim
Recitation	Th	7:45 am or 1:00 pm	G09 Heim

### Course Materials

- Textbook: Chemistry: A Molecular Approach, 1<sup>st</sup> Edition by Tro (hard copy available at the Lyco bookstore or electronic copy available on-line from CourseSmart at <http://www.coursesmart.com>)
- Chemistry 110 Laboratory Manual (available at the campus bookstore)
- Non-programmable calculator capable of performing logarithmic functions and scientific notation (no passing or sharing allowed in exams)
- (Optional, but strongly recommended) Access code for Mastering General Chemistry. If textbook is purchased new from the Lyco bookstore, access code is included. Otherwise, you can purchase one at the following web site: <http://www.masteringchemistry.com/>
- Bound laboratory notebook (available at the Lyco bookstore)
- Safety Glasses (available at the Lyco bookstore)
- Laboratory deposit (\$10.00 due at the first lab session)

### Distribution Requirement

Because this course meets a distribution requirement, it includes a writing component. At least 10 pages of writing will be expected from each student during the semester, some of which will be formally evaluated. If you need help with writing, please feel free to ask the instructors for assistance. You can also get assistance with writing at the writing center on the third floor of Snowden Library

### Moodle

This course utilizes a content management system (fancy name for a website) called Moodle. You will be **expected** to check this website frequently for announcements, course information, and scheduling. This is the only place where homework assignments will be announced. The web address for the site is

<http://moodle.lycoming.edu/moodle/course/view.php?id=501>

### Office Hours/Additional Help

Office hours are for the purpose of walk in instruction, discussion, or just to chat. Unless otherwise announced, I will normally be available when my door is open, but you are always welcome to make an individual appointment. The Academic Research Center (ARC) is available for course tutoring, including writing. ARC is on the third floor of Snowden Library. ***Do not wait until the night before an exam or assignment is due to get assistance.*** An optional study group led by a student facilitator (Alex Hunter) will be scheduled (date and time to be announced later). *The path to success in this course is through hard work. If you find yourself struggling with the material, please get help before you get behind.*

### Special Needs

If you have a specific disability and choose to request academic accommodations to meet your needs, please consult with Mr. Dan Hartsock, Coordinator of Services for Students with Disabilities. His office is in the Academic Resource Center on the third floor of Snowden Library. You can also reach him by phone (570-321-4294).

### Technology Policy

While you are expected to attend and participate in this class, your cell phone, computer, and MP3 players are **not**. Use of cell phones, computers, and MP3 players during class will not be permitted and may result in your dismissal from the class for the day. Use of cell phones, computers, and MP3 players during examinations and quizzes will be considered academic dishonesty, which will result in a zero being awarded for the quiz or examination (No exceptions!).

Grading

- Grades will be scaled to the number of points in the table below.

	<u>Points</u>
Examinations (4)	450
<i>Highest midterm score</i>	<i>115</i>
<i>Middle midterm score</i>	<i>105</i>
<i>Lowest midterm score</i>	<i>95</i>
<i>Final exam</i>	<i>135</i>
Quizzes	100
Laboratory	150
Total	700

- Your highest six quiz scores will count toward your quiz grade. **There will be no makeup quizzes.**
- If you know that you will be unable to attend class on the day of an examination (for a funeral, health-related circumstance, or Lycoming athletics), it is your responsibility to contact the instructor a week before to arrange to take the exam early. If you miss an exam due to an unforeseen emergency (with an excuse from the Provost's office), the exam will be replaced with the average of your other exam scores (only one exam per semester may be replaced). All other absences on exam dates will result in the awarding of zero points for the exam. **No examinations will be given after the scheduled exam date/time.**
- The grading scale will be as follows. Adjustments to this scale are possible, but highly unlikely.

≥ 90%	A range (A/A- cutoff: 92%)
80-89%	B range (B+/B cutoff: 88%, B/B- cutoff: 82%)
70-79%	C range (C+/C cutoff: 78%, C/C- cutoff: 72%)
60-69%	D range (D+/D cutoff: 68%, D/D- cutoff: 62%)
< 60%	Fail

- In order to receive a passing grade, you must achieve at least 60% of the points in both the lecture (exams/quizzes) and laboratory portions of this course.***

Academic Honesty (from the Student Handbook):

Academic dishonesty is a willful perversion of truth, or stealing, cheating, or defrauding in instructional matters. Students will have engaged in academic dishonesty if they copied the work of another without attribution, willfully allowed another to copy their work, falsified information, submitted the work of another as though it were their own, or committed other acts of plagiarism or actions deemed to be dishonest by the instructor.

ACADEMIC DISHONESTY IS A VERY SERIOUS CHARGE, WHICH CAN LEAD TO SUSPENSION FROM THE COLLEGE. All students should become familiar with the rules of academic honesty and apply them in ALL academic work.

Quizzes

Quizzes will be announced at least one lecture before they will occur and will be given in lecture. The purpose of these quizzes is to provide you with an opportunity to determine where your deficiencies may be and to provide a "gentle" reminder of how important it is to stay current with the progress of the course (quiz questions are normally taken from recitation or homework problems). As with the examinations, quizzes should be considered cumulative and may contain information from the laboratory or lecture portion of the course. Quizzes will occur on Wednesdays unless an announcement indicating otherwise is made.

### Examinations

Midterm examinations will be given during regularly-scheduled lecture time and will be administered on the following dates. Because the material presented later in the class builds upon concepts presented earlier, all exams should be considered cumulative.

Examination 1	October 1 (Wednesday)
Examination 2	October 29 (Wednesday)
Examination 3	November 24 (Monday)
Final Examination	December 9 (Tuesday; 1:00 to 4:00 PM)**

\*\* The final examination time and date is established by the registrar.

### Homework

In this course, homework assignments will not be collected, but it is of utmost importance that you attempt them. The selected homework problems provide an indication of the topics that are important. This makes solving them of utmost importance to your grade and your performance in the course will likely correlate with the amount of time spent solving problems. Because learning can be much more efficient through failure, I feel strongly that they should be attempted individually before seeking help from others or before checking the solutions manual.

Homework assignments will be posted on our class Moodle and Mastering Chemistry websites and will not be announced in class. Assigned homework may take the form of textbook problems (Review Questions, Problems by Topic, Cumulative Problems, and Challenge Problems), Mastering Chemistry problems, and Chemistry Puzzles. Please feel free to stop by my office to discuss any difficulties you may have with any of the homework problems.

### Attendance

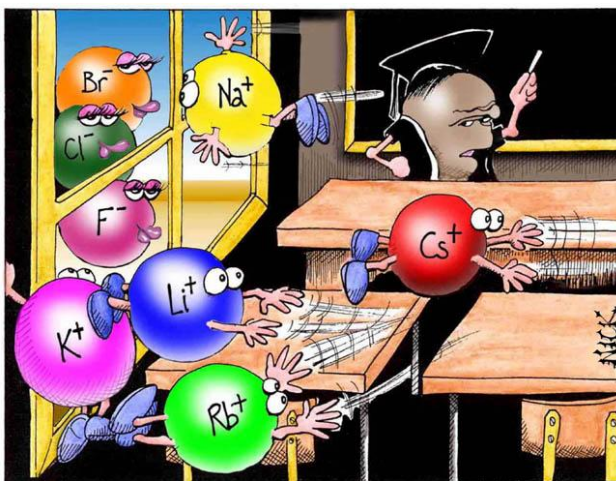
Regular attendance at lecture and recitation is **expected**. Students with 4 or more absences will incur a reduction in their final grade of 5%. I do not distinguish between excused and unexcused absences. Extra credit will be awarded for attendance at chemistry colloquium (Fridays and some Wednesdays from 3-4:15pm). Two points will be added to your exam grade for each seminar attended (to a maximum of 14 points). If your schedule does not permit attendance at colloquium, you may write a 10 page, double-spaced research paper on some aspect of chemistry. The paper must be original (not written for another class) and will be submitted to Turnitin. Plagiarism of an extra credit paper will be considered a violation of the academic honesty policy of the student handbook and will be reported to the Provost.

### Laboratory Attendance

Acceptable performance in the laboratory is imperative for success in chemistry. **No student will pass the course with less than a score of 60% in the laboratory portion of the course.** You will be expected to arrive to laboratory on-time. Missing the prelab session may result in your dismissal from the lab for the day. **Attendance in laboratory is mandatory.** Makeup laboratory experiments will be difficult, if not impossible, and will only be permitted for legitimate reasons. All laboratory makeup sessions (even for night lab students) must be approved by and arranged through the laboratory coordinator (Dr. Mahler).

### Laboratory Safety

Safe laboratory practices, including proper attire, will be expected at all times. Long pants are required as well as closed toe shoes (no sandals or bare feet). Wearing contact lenses during laboratory session is strongly discouraged. If you feel you need to wear your contact lenses during laboratory session, you should first discuss this with the laboratory coordinator (Dr. Mahler). You will not be permitted to begin any experimental procedures until all safety concerns have been addressed. **Repeated safety violations will cause your expulsion from the laboratory and a zero for the experiment.**



*"Perhaps one of you gentlemen would mind telling me just what it is outside the window that you find so attractive..?"*

### Tentative Topic Schedule

The lecture schedule presented here is tentative and may/will change during the semester.

<u>Week Beginning</u>	<u>Lecture Topic (Chapters)</u>
August 25	1
September 1	1,2
September 8	2
September 15	2,3
September 22	3
September 29	3,4
October 6	4
October 13	4,5
October 20	5,6
October 27	6,7
November 3	7,8
November 10	8,9
November 17	9
November 24	10
December 1	10,11
December 8	Final Exam

<u>Lab Instructor</u>	<u>Responsibilities</u>	<u>Office Number</u>	<u>Email Address</u>
Dr. Charles Mahler	Laboratory Coordinator, Lab Sections N, Q, R	202 Heim, x4351	mahler@lycoming.edu
Dr. David Franz	Lab Section S		franz@lycoming.edu

**TENTATIVE LABORATORY SCHEDULE**  
**General Chemistry 110, Lycoming College, Fall 2007**

<b>Date</b>	<b>Experiment</b>	<b>What's Due</b>
Aug. 26, 28	Orientation, Check in, Brief Expt. On Scientific Method and Conclusions	Lab Deposit, have safety glasses, get key
Sept. 2, 4	The Measurement of Mass and Volume: <b>Density</b> of Liquids and Solids	<i>Start of lab:</i> Density Prelab, TOA <i>Leave lab:</i> Density data sheets
Sept. 9, 11	The <b>Separation</b> of a Mixture	<i>Start of lab:</i> Separation Prelab, TOA Density lab report <i>Leave lab:</i> Separation data sheets
Sept. 16, 18	<b>Percent Water</b> in a Hydrate	<i>Start of lab:</i> : % Water Prelab, TOA Separation lab report <i>Leave lab:</i> % Water data sheets
Sept. 23, 25	Separation of the Mixture by Simple <b>Distillation</b> and Measurement of the Boiling Point of the Solvent (Part 1)	<i>Start of lab:</i> Distillation Prelab, TOA % Water lab report <i>Leave lab:</i> Distillation data sheets
Sept. 30 Oct. 2	The Synthesis of Potassium Aluminum Sulfate ( <b>Alum</b> ) From Aluminum Scrap	<i>Start of lab:</i> Alum Prelab, TOA Distillation lab report <i>Leave lab:</i> Alum data sheets
Oct. 7, 9	Freezing Point ( <b>F.P.</b> ), <b>Density</b> and IR of the Solvent (Part 2)	<i>Start of lab:</i> FP, Density Prelab, TOA Alum lab report <i>Leave lab:</i> FP, Density data sheets
Oct. 14, 16	The <b>Nine Bottle</b> Problem	<i>Start of lab:</i> Nine Bottle Prelab, TOA FP, Density lab report <i>Leave lab:</i> Nine Bottle lab report
Oct. 21, 23	<b>Recrystallization</b> and Melting Point ( <b>M.P.</b> ) Of The Solute (Part 3)	<i>Start of lab:</i> Recrystal, MP Prelab, TOA Nine Bottle Lab Question <i>Leave lab:</i> Recrystal, MP data sheets
Oct. 28, 30	<b>Atomic Weight</b> of a Metal	<i>Start of lab:</i> At. Weight Prelab, TOA Recrystal, MP lab report <i>Leave lab:</i> At. Weight data sheets
Nov. 4, 6	<b>Molar Mass</b> of the Solvent by Vapor Density (Dumas Method) (Part 4)	<i>Start of lab:</i> Molar Mass Prelab, TOA At. Weight lab report <i>Leave lab:</i> Molar Mass data sheets
Nov. 11, 13	<b>Calorimetry</b> , $\Delta H$ , and Hess' Law	<i>Start of lab:</i> Calorimetry Prelab, TOA Molar Mass lab report <i>Leave lab:</i> Calorimetry data sheets
Nov. 18, 20	Confirmatory Identification by Gas Chromatography ( <b>GC</b> ) and Infrared ( <b>IR</b> ) Spectroscopy (Part 5)	<i>Start of lab:</i> Calorimetry lab report <i>Leave lab:</i> GC, IR data sheets if any
Nov. 25, 27	THANKSGIVING – NO LAB	
Dec. 2, 4	Checkout	<i>Start of lab:</i> GC, IR lab report <i>Leave lab:</i> Turn in key, get deposit back

*Note: The experiments as printed in the lab manual follow the order of this tentative laboratory schedule for the Fall 2008 semester.*