



Chemistry 110
General Chemistry
Syllabus
Fall 2017



Lecture Instructor

Dr. Jeremy Ramsey

Responsibilities

Lecture, Recitation
Sections M, N, Q, R, S

Office Number

232 Heim
321-4103

Office Hours

Just stop in or
by appointment

Contact Info

ramsey@lycoming.edu
Remind App: @chem110g

Rationale for Instruction

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, and molecular shape. 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 will be necessary for you to understand what is happening chemically 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 then being evaluated using almost identical problems during an exam or quiz. This will not be the case with this class. As with all learning, some memorization will be necessary, however, methods involving straight memorization will not be 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 will require 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.

Course and Departmental Learning Objectives

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

- Describe measured quantities, their magnitude, and their uncertainties using units, unit conversion, and significant figures
- Demonstrate an understanding of the fundamental properties of chemical systems including atomic structure, molecular structure, stoichiometry, thermochemistry, quantum theory, and chemical bonding as well as the vocabulary that goes along with these topics
- Demonstrate how the state in which matter exists (solid, liquid, gas) is related to its chemical properties and reactivity
- Use mathematical calculations to describe the fundamental properties of chemical systems including atomic structure, molecular structure, stoichiometry, thermochemistry, quantum theory, and chemical bonding

"In the middle of difficulty lies opportunity"

-- Albert Einstein

"Practice isn't the thing you do once you're good. It's the thing you do that makes you good."

-- Malcolm Gladwell from *Outliers: The Story of Success*

This course will provide instruction in the following areas covered by the following departmental learning goals

- Exhibit proficiency in the major sub-disciplines of chemistry
- Perform wet laboratory techniques as appropriate to the major sub-disciplines of chemistry
- Understand and use modern chemical instrumentation
- Exhibit integrative, problem-solving skills, such as experimental design, data manipulation, and data interpretation
- Communicate the results of chemical investigations effectively in written and oral form
- Demonstrate responsible conduct in the laboratory, including laboratory safety and ethical research practices

Institutional Learning Objectives

This course (lecture and laboratory) supports the following expected student learning outcomes of a Lycoming College education:

- Achieve depth of learning in at least one field of study
- Communicate effectively in written and oral forms
- Think critically
- Demonstrate information literacy skills and technological competence appropriate for their discipline

Meeting Times

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

Prerequisite

- Math 100 (credit for or exemption from)

Required Course Materials

- Textbook: Chemistry: The Science in Context, 4th Edition by Gilbert, Kirss, Foster, and Davies (An electronic copy is available on-line from CourseSmart at <http://www.coursesmart.com>)
- Chemistry 110 Laboratory Manual (only available at the Lyco bookstore)
- Casio FX-260 Solar non-programmable calculator (no passing or sharing allowed in exams or quizzes)
- Bound laboratory notebook
- Safety Glasses

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. ***The course Moodle site is the only place where homework assignments will be announced.*** You can find the site by going to <http://moodle.lycoming.edu> and searching for Chemistry 110 (be careful not to go to the lab page). The enrollment password is gummybear (lowercase and all one word).

Attendance

Regular attendance at lecture and recitation is **expected**. Students with 4 or more absences will incur a reduction in their final grade of 10%. I do not distinguish between excused and unexcused absences. Attendance will be taken at the beginning of class and missing it will cause you to be considered absent. I will not inform you of the number of classes that you have missed during the semester. Your clicker will be required to indicate your presence at each class meeting.

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 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

Lycoming College provides academic support for students who officially disclose diagnosed learning, physical, and psychological disabilities. If you have a diagnosed disability and would like to seek accommodations, please contact Jilliane Bolt-Michewicz, Assistant Dean of Academic Services/Director of the Academic Resource Center. Dean Bolt-Michewicz will help you arrange for appropriate academic accommodations. She can be reached by calling (570) 321-4050, emailing michewicz@lycoming.edu, or visiting her office (Academic Resource Center, 3rd Floor of Snowden Library).

Academic Dishonesty (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. Instances of academic dishonesty will result in failure of the course and will be reported to the Provost.

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, tablets, computers, and MP3 players during class will not be permitted and will result in your dismissal from the class for the day. Students wanting to use a tablet device for taking notes in lecture should discuss this with the instructor first. **Use of cell phones, computers, tablets, MP3 players, or other devices during examinations, written quizzes, or clicker quizzes will be considered academic dishonesty, which will be reported to the Provost and will result in a zero being awarded for the quiz or examination (No exceptions!).**

The only calculator that you may use in this course is the Casio FX-260 Solar or Casio FX-260 Solar II. We have taken this step because we have found that some basic scientific calculators produce erroneous results due to the programming utilized by the manufacturer to round numbers and because we have found that many students have difficulty using scientific calculators. Having one model will allow the instructors to introduce directions for using the calculator that will be applicable to all students in the course. It is suggested that you utilize this calculator even outside of class so that you will become familiar with it. **Students found using an alternate calculator during an exam or quiz will receive a zero for the assignment (No exceptions!).**

“The most dangerous kind of overconfidence in our abilities comes not when we are already skilled at a task but when we are still unskilled.”

-- Christopher Chabris and Daniel Simons from *The Invisible Gorilla and Other Ways Our Intuitions Deceive Us*

Grading

- Grades are not awarded arbitrarily. They are based on the point scale in the table below.

	<u>Points</u>
Examinations (4)	450
<i>First midterm score</i>	<i>105</i>
<i>Second midterm score</i>	<i>105</i>
<i>Third midterm score</i>	<i>105</i>
<i>Final exam</i>	<i>135</i>
Homework	100
<i>Quizzes</i>	<i>100</i>
Laboratory	115
Total	<hr/> 665

- The quiz grade consists of the algebra check score and the six highest quiz scores (out of seven quizzes). **There will be no makeup quizzes.** Because there are seven quizzes, this means that the lowest score will be dropped.
- Clickers will be used to monitor progress on homework questions and the usage of YouTube instructional videos. The percentage of correct answers will determine the points earned for these questions. Each student will be able to drop nine questions so being absent for approximately three classes will not affect this portion of your grade.
- 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 approved by 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 makeup examinations will be given after the scheduled exam date/time.**

The grading scale will be as follows.

≥ 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/homework) and laboratory portions of this course.***

Examinations

Midterm examinations will be given during regularly-scheduled lecture time in D001 (Academic Center) 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. ** The final examination time and date is established by the registrar.

Examination 1	September 27 (Wednesday)
Examination 2	October 25 (Wednesday)
Examination 3	November 29 (Wednesday)
Final Examination	December 12 (Tuesday; 1:00 – 4:00 PM)**

Homework

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 website and will not be announced in class.** Assigned homework will take the form of textbook problems that can be found at the end of each chapter. Please feel free to stop by my office to discuss any difficulties you may have with the homework problems. Your mastery of the homework concepts in this course will be evaluated through the use of quizzes and clicker questions.

Quiz dates are listed below and will be given toward the end of a regularly scheduled lecture. The quiz questions are taken from or based on recitation/homework problems. **They will require that you actually practiced prior to the quiz.** As with the examinations, quizzes should be considered cumulative and will contain information from the lecture portion of the course. The five highest quiz scores will count toward your homework grade. Quizzes will occur on Wednesdays and, unless you are notified otherwise (no later than a week prior to the scheduled quiz date), they will be given on the following dates:

	<u>Date</u>
Quiz 1	September 6
Quiz 2	September 13
Quiz 3	September 20
Quiz 4	October 11
Quiz 5	October 18
Quiz 6	November 8
Quiz 7	November 20

In the case of a campus-wide flu outbreak, Lycoming College advises that you do not attend class until any fever has dissipated for 24 hours. I will honor this policy, so *if you find that you have contracted the flu*, you should contact Dr. Ramsey and your lab instructor using your Lycoming email prior to missing your first class.

Colloquium/Extra Credit

Extra credit will be awarded for attendance at chemistry colloquium (Fridays and some Wednesdays from 3:15-4:15pm). Two points will be added to your exam grades for each seminar attended (to a maximum of 12 points). If your schedule does not permit attendance at colloquium, you may complete an alternate assignment. The assignment will be submitted to Turnitin. Plagiarism of an extra credit assignment will be considered a violation of the academic honesty policy of the student handbook and will be reported to the Provost.

Laboratory Instruction

<u>Lab Instructor</u>	<u>Responsibilities</u>	<u>Office Number</u>	<u>Email Address</u>
Ms. Annie DiSante	Lab Sections M, N, R, S	212 Heim, x4327	spenceran@lycoming.edu
Dr. Charles Mahler	Lab Section Q	233 Heim, x4186	mahler@lycoming.edu

Laboratory Attendance

Acceptable performance in the laboratory is imperative for success in chemistry and attendance in laboratory is mandatory. ***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 lecture session may result in your dismissal from the lab for the day. 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 Ms. DiSante.

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. 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.**

"Anyone who stops learning is old, whether at twenty or eighty."

--Henry Ford

"You have to be confused before you can reach a new level of understanding anything."

-- Dudley Herschbach

"Discipline is just choosing between what you want now and what you want most." --Unknown Author

"Success is a function of persistence and doggedness and the willingness to work hard for twenty-two minutes to make sense of something that most people would give up on after thirty seconds."

-- Malcolm Gladwell from *Outliers: The Story of Success*

"The finding that incompetence causes overconfidence is actually reassuring. It tells us that as we study and practice a task, we get better at both performing the task and knowing how well we perform it."

-- Christopher Chabris and Daniel Simons from *The Invisible Gorilla and Other Ways Our Intuitions Deceive Us*