

Chemistry 191 - General Chemistry I

Course Syllabus

Fall 2017

Instructors:

Dr. Dugan Hayes

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Office hours: Thurs. 1 pm or by appointment

Scheduling:

Lecture: MWF 1pm, Beupre 105

Recitation: M 2pm, Beupre 215

Laboratory Section 1: Tu 8:00-10:45 am, Beupre 165

Laboratory Section 2: Th 8:00-10:45 am, Beupre 165

Objectives:

Learn general concepts and theories of chemistry

Develop and improve quantitative problem solving skills

Learn basic techniques and methods in the chemistry lab

Apply basic principles of chemistry to new problems and situations

Text (lecture): General Chemistry: Principles & Modern Applications by Ralph H. Petrucci, F. Geoffrey Herring, Jeffrey D. Madura, and Carey Bissonnette, Eleventh Edition, Pearson, 2016.

Prerequisites: Chemistry major. Not open to students with credit in CHM 101.

Grades: Your final grade will be calculated from the following:

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|--------------------------------------------------------------------------------------------|---------|
| a. Weekly quizzes, usually given during recitation
(two lowest quizzes will be dropped) | 200 pts |
| b. Two one-hour exams, given during recitation | 200 pts |
| c. Laboratory, see lab syllabus for more details | 150 pts |
| d. Final exam | 200 pts |

Total: 750 pts

Please note that changes to the syllabus may be made to account for unforeseen circumstances (weather, etc.), but students will be notified in advance of any changes.

Grades are to be determined using a combination of an absolute scale and a curve. To pass CHM 191, at least 50% of the points must be earned. To obtain a C- or higher, at least 60% of the

points must be earned. The remainder of the grades are determined using a curve. Based on past experience, the median of the curve tends to be a C. Incompletes are given only for valid medical reasons. A note from a medical professional is required to obtain an incomplete. Quizzes cannot be made up. If a quiz is canceled owing to weather or any other reason, the quiz will be given during the lecture portion of the course on the next date the class meets.

Quizzes and exams will generally focus on the most recent material covered in class, but all material covered up to that point is fair game as well. Many different concepts covered throughout the course may be covered in a single question. Chemistry is a cumulative discipline, so it is important to develop a holistic understanding of all the material rather than thinking of chapters in the book as unrelated units.

Chemistry is also laboratory science, and the laboratory portion of this course is essential to mastering the subject. For the laboratory portion of CHM 191, any student submitting 5 or fewer laboratory reports for grading will receive an F as their final course grade in CHM 191. Students submitting only 6 or 7 laboratory reports for grading will receive 0 points for the laboratory portion of the course. Keep in mind that the laboratory portion of the course represents 20% of the total possible points.

Overview: CHM 191 is the first semester of the full-year general chemistry course sequence for students who have declared a major in chemistry. Most generally, this semester we seek to understand the fundamental nature of matter from an atomic and molecular perspective. We will introduce basic concepts from thermodynamics and quantum mechanics and build toward a physical picture of chemical bonding and reactivity. This course provides a conceptual framework that is absolutely crucial to master before continuing in more advanced studies in chemistry.

The course includes three lectures, one recitation section, and one three-hour laboratory period per week. Success in CHM 191 requires that you attend and satisfy the requirements of all three aspects. You will receive a separate syllabus for the laboratory portion of the course. The laboratory experiments are designed to illustrate the principles learned in the lecture/recitation parts of the course.

The lecture and recitation section portions of the course are closely coupled. The recitation section has two purposes. First, with three exceptions, each recitation section will begin with a 15 minute quiz covering the material from the previous week. For those recitation periods having a quiz, after completing the quiz and reviewing the quiz solution, the remainder of the recitation section will be used to solve problems that illustrate the principles of the course.

Success in CHM 191 requires constant practice in solving problems. To help with such practice, problems sets are to be posted on the CHM 191 web page each week. The problem sets will not be collected and graded, but the problem sets are most helpful if they are treated as if they are to be collected and graded. After a period of time, solutions to the problems sets will also be posted.

You are **strongly** encouraged to try to solve the problems by yourselves before examining the solved problems. Keep in mind that it is far easier to understand a solution to a problem than it is to solve the problem on your own. You will need to solve the problems on your own when taking quizzes and exams.

The CHM 191 Sakai page: All problem sets, problem set solutions, quiz solutions, and exam solutions will be posted on the course Sakai page. No paper copies of the problem sets or syllabi will be distributed.

Disability services: Any student with a documented disability is welcome to contact me as early in the semester as possible so that we may arrange reasonable accommodations. As part of this process, please be in touch with Disability Services for Students Office at 302 Memorial Union, Phone 401-874-2098.

Extra help: Many of you will find that you need additional in-person assistance to master the course material and problem solving in general. I will be available for office hours (Beaure 374E) on Wednesdays and Fridays at 11am. I can also be available for office hours at other times if necessary. Please email me (dhayes@chm.uri.edu) to set up an appointment.

Attendance: Attendance at lectures is neither required nor enforced, but it is exceedingly unlikely that a student who does not regularly attend lectures will be successful in CHM 191. However, attendance is of course required for all quizzes and exams. Occasionally, students may miss quizzes and exams due to illness, severe weather, or sanctioned University events. If ill, students should not attend class and should seek medical attention, especially if they have a communicable disease such as the flu. If the University announces that classes are cancelled due to severe weather, any quiz or exam scheduled for that day will be cancelled and rescheduled for the next class period.

If a student must miss a scheduled exam due to a religious holiday or sanctioned University event, the student must inform me at least a week in advance (preferably as soon as possible) so we can plan accordingly. The student will then take the same exam as the rest of the class or a comparable exam after the scheduled date at the Academic Testing Center and sign a pledge attesting that the exam material had not been discussed with classmates. In the case of an unscheduled absence (illness, accident, personal tragedy, etc.), the student will be given a comparable exam at a later date. Quizzes may not be made up or taken in advance. If a student must miss a quiz, that grade will count as one of the two dropped quizzes. If a student must miss more than two quizzes for the above reasons, those quizzes will also be dropped. However, documentation *must* be provided for *all* missed quizzes (doctor's note, etc.). If sufficient documentation is not provided, the student will receive a zero for the quiz grade.

Material covered:

Chapter 1	Matter: Its Properties and Measurement
Chapter 2	Atoms and Atomic Theory
Chapter 3	Chemical Compounds
Chapter 4	Chemical Reactions
Chapter 5	Introduction to Reactions in Aqueous Solutions
Chapter 6	Gases
Chapter 7	Thermochemistry
Chapter 8	Electrons in Atoms
Chapter 9	The Periodic Table and Some Atomic Properties
Chapter 10	Chemical Bonding I: Basic Concepts
Chapter 11	Chemical Bonding II: Valence Bond and Molecular Orbital Theories
Chapter 12	Intermolecular Forces: Liquids and Solids
Chapter 14	Solutions and Their Physical Properties

Important dates:

6 Sept.	First day of class
18 Sept.	Quiz #1
25 Sept.	Quiz #2
2 Oct.	Quiz #3
9 Oct.	Columbus Day (no class)
11 Oct.	Quiz #4
16 Oct.	Exam #1
23 Oct.	Quiz #5
30 Oct.	Quiz #6
6 Nov.	Quiz #7
13 Nov.	Veteran's Day (no class)
15 Nov.	Quiz #8
20 Nov.	Exam #2
23-26 Nov.	Thanksgiving recess (no class)
4 Dec.	Quiz #9
11 Dec.	Last day of class
**15 Dec.	Final Exam, 11:30am-2:30pm (check online for date/time change)