

Chemistry 142

Dr. Heather Patrick

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Course Description

Chemistry 142 is the continuation of Chemistry 141 and, along with the respective labs, completes the two-semester course in General Chemistry. The Chemistry 141-142 sequence is designed for students who plan to major in chemistry or another science and for those who plan on attending medical school, dental school, veterinary school, pharmacy school, or most allied health schools. Topics covered in Chemistry 142 include transition metal chemistry, solution chemistry, chemical kinetics, chemical equilibrium, thermodynamics, acid-base chemistry, electrochemistry, and nuclear chemistry.

Course Goals

The goal of the Chemistry 141-142 sequence is to provide an introduction to the study of matter and the changes it undergoes. The course aims to develop a student's analytical, problem solving, and critical thinking skills, and it emphasizes the application of these skills to both macroscale and microscale systems.

Both Chemistry 141 and Chemistry 142 assume a good working knowledge of algebra, and they will provide you with the chemistry background to take further advanced courses in chemistry, such as organic chemistry, physical chemistry, and analytical chemistry. General Chemistry will also prepare you for the chemistry portion of the physical sciences section on the MCAT.

Materials

Chemistry, 9th ed., by Chang

Optional: Study guide, student solutions manual

Laboratory manual: sold by Chemistry Department

Carbon-copy lab notebook

Safety glasses

You will need a scientific calculator, but only certain types are allowed.

Specifically, you may NOT have one that is capable of solving equations, storing information, or downloading data. Using TI calculators as an example, the TI 30-series calculators are acceptable; the TI 80-series are not. If you do not have an acceptable scientific calculator, most discount stores (Wal-Mart, Target, K-Mart) and office supply stores (Staples, Office Depot) sell them for around \$10.

The three materials required for lab must be obtained prior to your first lab meeting.

Office Hours

Pierce 210

Office hours: by appointment

(770) 784-8396

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Attendance

You are expected to attend all lectures and lab sessions. If, however, you are absent due to an emergency, you must notify me. You are responsible for all material covered in lecture if absent.

You are allowed 3 absences in lecture and no absences in lab. If you exceed the 3-absence limit for any reason, you will lose 1 point from your final course average for the 4th absence, 2 additional points for the 5th absence, and 3 additional points for each further absence.

Make-up tests will not be given, regardless of the reason a test was missed. If you miss a test and present me with an acceptable excuse, the grade on the final exam will count in place of the missed test grade. You must notify me by the day and time of the test that you will not be present, and you must give me the reason for the absence. If the excuse is not considered acceptable, the test grade will be a zero. It is up to me to make the determination as to whether an excuse is acceptable. Illness or an emergency situation are the only acceptable excuses for missing a test. Missing a test also counts as a course absence.

Being late to class is rude and distracting. Therefore, 3 tardies will be treated as 1 absence. If you are more than 15 minutes tardy, you will be counted absent. If you come in late, it is your responsibility to see me immediately after class to ensure that you are marked tardy and not absent. No adjustments will be made at a later time. When you are in class, you must be attentive and not disturb others. Leaving class early counts as an absence, as does sleeping through a class or being generally inattentive.

Lecture Outlines

I will post lecture outlines on our class learnlink conference before each lecture. This outline will help guide you as you read the textbook material before each lecture. I recommend that you print out a copy of the outline, take notes on it before coming to class, and then bring it to the appropriate class so that you can spend more class time thinking and less time transcribing. You are responsible for reading the corresponding material in the text before each class and coming to class prepared to discuss the material and ask any questions you have from the reading.

Note that these outlines are abridged. While they will let you know what topics we will cover each day in order to help you prepare for class, they will not cover the material. They are in no way a substitute for attending the lecture.

Quizzes

Brief, previously announced quizzes may be given sporadically throughout the course. These will be given in the first few minutes of class. Make-up quizzes will not be given, regardless of the reason a quiz was missed. If you miss a quiz and present me with an acceptable excuse, the quiz will not count toward your grade. You must notify me by the day and time of the quiz that you will not be present, and you must give me the reason for the absence. If the excuse is not considered acceptable, the quiz grade will be a zero. It is up to me to make the determination as to whether an excuse is acceptable. Illness and emergency situations are the only acceptable excuses for missing a quiz.

Unannounced quizzes may also be given on occasion. These will cover textbook reading assignments that have been assigned prior to the quiz. The honor code applies to all quizzes.

Group Assignments

Problem sets, which will be collected and graded, will be assigned on an approximately weekly basis. You will work on these assignments in groups of four students. Each group will hand in one copy of their solutions that has been signed by all group members, indicating that it is the work of all four group members. If the problem set does not represent the work of a particular member, then that individual should not sign it and other group members should not sign his / her name to it; this would be a violation of the honor code. The work must be legible and clear. Please only write on one side of the paper and staple each problem set. Your group may contain students from any Chem 142 section taught by Dr. Patrick. These problem sets are due at the beginning of the earliest class for any of your group members. Late problem sets will not be accepted.

Solutions to these problem sets will be posted outside my office and on electronic reserve after the problem sets have been handed in. It is your responsibility to ensure that you understand the posted solutions to all assigned problems. Since General Chemistry is a problem-oriented course and the tests will consist mainly of problems, it is essential that you become proficient in working them. You should attempt each problem on your own before meeting with your group members. Note that it is not sufficient to be able to follow how a problem is worked. On a test you will have to work problems through on your own; the only way you will be able to do this is if you have worked with your group and solved several practice problems on your own.

Tests

There will be 4 tests, given approximately every 3 – 4 weeks. These will be given in class and will last 50 minutes each. You must take the test in your regular class time. If you come in late, you will not be given extra time to finish the test. You may bring only a calculator, pencils, and one 3 x 5 index card; any other material will be given out with the test. Make sure that your calculator is working and that you know how to use it; you will not be allowed to borrow or share one. The honor code applies to all tests.

Schedule

Chapter 22, sections 3, 5, and 7	Chapter 15
Chapter 11, sections 1-4 and 7-9	Chapter 16
Chapter 12	Chapter 18
Chapter 13	Chapter 19
Chapter 14	Chapter 23 (if time)

Test Schedule

Test I	Friday, Feb. 9
Test II	Friday, March 2

Test III Friday, April 6
Test IV Friday, April 27

Tests may be moved back to the next class meeting if necessary to cover the material. The material covered on each test will be announced in class.

There will be a cumulative final exam given during the regularly scheduled final exam period.

Preparation for Class¹

In what has become a seminal article in higher education, Arthur Chickering and Zelda Gamson outlined “Seven Principles for Good Practice in Undergraduate Education.” Many years of research went into the development of this list, and it has proven itself as an invaluable resource since its inception. Some of these principles involve actions that are your responsibility, some involve actions that are my responsibility, and some involve actions that are our combined responsibility. According to Chickering and Gamson, good practice in undergraduate education:

- 1) Encourages contact between students and faculty
I will be available for you and responsive to your needs both in and out of class, and it is your responsibility to speak up in class or come to my office when you need assistance. I will also arrange for out-of-class activities where we don’t even have to talk about Chemistry (but we might want to, anyway!).
- 2) Develops reciprocity and cooperation among students
“Good learning, like good work, is collaborative and social, not competitive and isolated.” (Chickering and Gamson, p. 2) When you are struggling with a topic, discuss it with your peers. Your group problem sets are a great vehicle for this type of interaction. This is where most of your learning will occur!
- 3) Encourages active learning
Simply sitting in class, listening to lectures, and watching others solve problems will not be sufficient in this class. You must be actively engaged in your studies if you want to succeed.
- 4) Gives prompt feedback
I will return and review graded quizzes and tests in the next class period. I will also return graded problem sets in the next class period. As explained above, I will post solutions, and it is your responsibility to review these assignments and ask any questions you have about them.
- 5) Emphasizes time on task
You will work hard in this class! See Dr. Parker’s “Survival Guide” for more details.
- 6) Communicates high expectations
I expect you to work hard in this class! If you do not know the material inside and out, as well as backward and forward, you will not do well on the tests.
- 7) Respects diverse talents and ways of learning

Students learn in a wide variety of ways, and I will work with you to find what works for you.

Honor Code

It is assumed that all Oxford College students will adhere to the highest standards of academic honesty and will uphold the Oxford College Honor Code. On tests, you may not use any material not distributed with the test itself except for a calculator, pencils, and one 3 x 5 index card. Anything else you bring into the room (including a cell phone) must be left at the front of the room. During a quiz or test, you may not give or receive any assistance. On lab reports, the work is to be your work alone; you may not give or receive any assistance from other people, and you may only use authorized materials.

Since absences and tardies can affect your grade, giving false information about these is a violation of the Honor Code. Note also that the Oxford College Honor Code expects students to report any violations of the Code of which they are aware.

Laboratory

Your lab instructor will explain the lab procedures to you. The lecture and lab are designed to coordinate so that you will have covered material in class before being required to use that material in lab. As you will note in the next section, your lab grade can either improve or lower your final course average.

Grading

Your quizzes and group problem sets will combine to count as one test grade, and the final exam will count as two test grades, giving a total of 7 (4 tests + final exam counting twice + quizzes/problem sets). The lowest of these 7 grades will be dropped. The average of the remaining 6 grades will constitute the lecture portion of your course grade.

Your course grade will be computed by adjusting your grade in the lecture portion using your lab grade as shown below. Note that your adjustment depends on how your final lab average compares to the average of the students in your lab section:

Your lab average:

Adjustment:

6.0 pts. higher than the average of your lab section, or more:	+ 3 pts. to lecture avg.
3.0 pts. higher to 5.9 pts. higher than the avg. of your lab section:	+ 2 pts. to lecture avg.
1.0 pts. lower to 2.9 pts. higher than the avg. of your lab section:	+ 1 pts. to lecture avg.
8.0 pts. lower to 1.1 pts. lower than the avg. of your lab section:	0 pts. to lecture avg.
9.9 pts. lower to 8.1 pts. lower than the avg. of your lab section:	- 1 pts. to lecture avg.
11.9 pts. lower to 10.0 pts. lower than the avg. of your lab section:	- 2 pts. to lecture avg.
13.9 pts. lower to 12.0 pts. lower than the avg. of your lab section:	- 3 pts. to lecture avg.
15.9 pts. lower to 14.0 pts. lower than the avg. of your lab section:	- 4 pts. to lecture avg.
16.0 pts. lower than the avg. of your lab, or more:	- 5 pts. to lecture avg.

Grades (after accounting for lecture, lab, and absences) will be assigned as follows:

93 – 100	A	77 – 79	C+
90 – 92	A-	73 – 76	C
87 – 89	B+	70 – 72	C-
83 – 86	B	67 – 69	D+
80 – 82	B-	60 – 66	D
		Below 60	F

References

- 1) Chickering, A.W. and Gamson, Z.F. (1987). Seven Principles for Good Practice in Undergraduate Education. AAHE Bulletin, March, 1987.