

CHEMISTRY 142
Spring 2019
COURSE SYLLABUS

Section A Instructor:

Julie T. Millard, Dorros Professor of Life Sciences
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Office hours: Tu, 1:30-2:30; We, 2:00-3:30

Section B Instructor:

Karena A. McKinney, Associate Professor of Chemistry
Keyes 211, x5767; karenamckinney@colby.edu
Office hours: Mo, 3:00-4:30; Th, 2:00-3:00

Lab Instructors:

Lisa M. Miller, Senior Lab Instructor in Chemistry
Keyes 310, x5752; lisa.miller@colby.edu

Greg T. Drozd, Assistant Professor of Chemistry
Keyes 213, x5760; greg.drozd@colby.edu

Profs. Millard and McKinney are happy to help with lecture material. The normal schedule of office hours is listed above, but these times may change (changes will be announced). You may come to either one of us, no matter which section you are in. Please do not hesitate to make an appointment if you cannot make the scheduled times. During the weeks of scheduled exams, we will have scheduled Question and Answer sessions. Email is also a convenient way to get a quick answer to a question.

Required Course Materials:

- **Textbook:** three options
 A. Chemistry, The Central Science, 13th Edition, Brown, et. al. **EBOOK** with **MASTERING CHEM ACCESS CARD** – NO Physical Book.
 ISBN: 9780321864406

 B. Chemistry, The Central Science, 13th Edition, Brown, et. al. **LOOSE PAGES** with **MASTERING CHEM ACCESS CARD**. ISBN: 9780321934802

 C. Chemistry, The Central Science, 13th Edition, Brown, et. al. **TRADITIONAL BOOK** with **MASTERING CHEM ACCESS CARD**. ISBN: 9780321864406
- **Homework:** “Mastering Chemistry” access code (masteringchemistry.com)
- **Lab:** Bound laboratory notebook
- **Calculator:** Sharp EL-501X

Attendance:

Attendance at every class and lab meeting is expected. Unexcused absences from class may result in a reduction of your grade (at the instructor’s discretion). More than two unexcused absences may result in your dismissal from the course.

Course Objectives and Learning Goals:

1. For students to gain an understanding of chemistry that supports their broad interests in science. The course also prepares students for Organic Chemistry and other advanced chemistry courses.
 - To learn to communicate using the language used by chemists.
 - To learn the basic principles of kinetics, chemical equilibria, thermodynamics, electrochemistry, and nuclear chemistry.
 - To understand how chemical reactivity regulates the natural world.
2. For students to improve their quantitative skills in a scientific context.
 - To improve skills in solving problems involving the integration and synthesis of new knowledge and to master the interface between narrative and mathematical problem solving.
 - To apply the method of inquiry used by chemists to solve conceptual and quantitative chemical problems using basic chemical principles, to explain the approach used, and to critically evaluate the outcome.
3. For students to improve their skills in the chemistry laboratory.
 - To understand the objectives of a particular experiment.
 - To work safely and collaboratively in the laboratory.
 - To accurately record, analyze, critically evaluate, and communicate experimental results.

Perseverance and resilience will be important keys to success in CH142. Stay involved and up-to-date on the homework.

Anticipated Course Outline:

<u>Topic</u>	<u>Reading in Text</u>
Chemical Equilibrium	CH 15
Chemical Kinetics	CH 14
Acid-Base Equilibria	CH 16
More Aqueous Equilibria	CH 17
Chemical Thermodynamics	CH 19
Electrochemistry	CH 20
Nuclear Chemistry	CH 21
The Periodic Table	CH 22, 23

Note that the material in Chapters 22 and 23 will be covered in the form of student presentations during the last few class periods.

Question and Answer Sessions:

Dates and times of Q&A sessions are as follows:

- Exam 1 Q&A: Wednesday, February 27; 7:00-8:00 PM
- Exam 2 Q&A: Wednesday, April 3; 7:00-8:00 PM
- Exam 3 Q&A: Monday, April 29; 7:00-8:00 PM

Grading:

- **Hour Exam 1 (15%)**- The first hour exam will be on **Thursday, February 28** at 5:00-7:00 PM in Keyes 105.
- **Hour Exam 2 (15%)**- The second hour exam will be on **Thursday, April 4** at 5:00-7:00 PM in Keyes 105.
- **Hour Exam 3 (15%)**- The third hour exam will be on **Tuesday, April 30** at 5:00-7:00 PM in Keyes 105.
- **Final Exam (20%)**- The final exam will be cumulative; this exam is scheduled for Monday, May 20 at 9:00 am.
- **Homework (12%)**- See below for more information.
- **In-class presentation (3%)**- See below for more information.
- **Laboratory (20%)**- Attendance is mandatory. You must pass lab to pass CH142. For more information about the laboratory, please visit the CH142 lab webpage.

Student Collaboration and Academic Integrity:

Honesty, integrity, and personal responsibility are cornerstones of a Colby education and provide the foundation for scholarly inquiry, intellectual discourse, and an open and welcoming campus community. These values are articulated in the Colby Affirmation and are central to this course. Students are expected to demonstrate academic honesty in all aspects of this course.

Academic dishonesty is a serious offense against the college. Sanctions for academic dishonesty are assigned by an academic review board and may include failure on the assignment, failure in the course, or suspension or expulsion from the College.

All material that you submit for a grade in CH142 must be the result of your own thoughts and work.

That said, we strongly encourage students to work together in preparing for class and laboratory. Small group discussions are very useful in generating ideas that aid in problem solving and stimulate learning. Brainstorming during problem solving is an important part of chemistry and often it is the best way to learn material in chemistry courses. Thus, you are encouraged to work together on practice problems from the text. On individual work for a homework or lab grade, however, any assistance that you give or receive from another student must be limited. A general hint such as "because this is a buffer problem, you can use the Henderson-Hasselbalch equation" is fine, but it is clearly not appropriate to give your work, including spreadsheets, to another student for copying or comparison. Instead, please ask your instructors if you need help!

Graded work includes exams, pre-lab assignments, laboratory reports, laboratory notebooks, and homework assignments. Note that this includes both calculations and answers to questions in laboratory write-ups. In lab, your collaboration ends with collection of data.

Academic dishonesty can take many forms including, but not necessarily limited to:

- Looking at or copying material from another student's work, or allowing another student to copy any of your work.

- Using any sources or materials during an exam that are not expressly allowed by the instructor, creating such materials and leaving them in a location where they might be used by you or another student (no such materials should be brought to the exam; they may not be on the floor, hidden in your exam, written on your hand, left in the bathroom, halls, or surrounding area, etc.).
- Altering your exam in any way after it is returned when asking for regrading of a portion of an exam.

Extra Help:

Please see either Professor Millard or Professor McKinney if you have questions about course material and your lab instructor if you have questions about laboratory material. Help is also available at the Chemistry Help Center, staffed by experienced and knowledgeable chemistry majors, which is open four evenings per week in Keyes 104 (Mo-Th, 7:30-9:30). These students will be happy to answer questions and help with problems. If you feel the need for further help, tutors are available- see Lisa Miller to make arrangements.

Exams:

There will be three one-hour exams this semester (**see dates above**) and a final exam during the exam period. To allow for universal access, all students may take up to two hours to complete the one-hour exams. Exam questions may come from lecture, lab, the text, and/or homework and will be a mix of multiple choice, numerical problems, and short answers. Please note that you must show your work on calculational problems, and partial credit is available.

In case of errors during the grading process or in calculating final scores, you may submit your exam for regrading within 3 class periods following the return of the exams. Please attach a note to your exam explaining the nature of the problem (addition error, not enough partial credit, etc.) and why you should receive more credit. If there is an addition error in your favor, you may consider the extra points a gift and feel no obligation to have the error corrected.

Students are expected to take all exams, and there are **NO MAKE-UP EXAMS**. If a student expects to be away for an official College activity, we will arrange for exams to be administered by a coach or other non-student person that accompanies the student. It is the responsibility of the student to let your professor know, **well in advance**, of any possible trips and to arrange with a person (for example, your coach) to administer the exam.

You must have your advising Dean contact your course instructor if you want to be excused from an exam for a medical or family emergency. You must authorize the Health Center to report your illness to your advising Dean. The grade for an unexcused missed exam is zero. The grade for an exam missed due to an excused absence will be calculated based on your three remaining unadjusted exam grades, normalized by the class average. Students with documented learning differences should follow college policy to arrange for accommodations during the first two weeks of the semester.

Important note: To encourage students to perform to the best of their abilities and to work towards improvement, all hour exams will be adjusted based on future test scores. All hour-exam grades will be adjusted upwards by replacing the exam score with the average of that exam grade and the subsequent exam grade (the final will be used to adjust the third exam grade). Note that this recalculation is automatic, and will only be applied if it improves your grade.

Homework Assignments:

The homework portion of your grade will be derived from an online homework application, "Mastering Chemistry." You must purchase an access code from the bookstore (bundled with new textbooks) or online (directly through the homework website) and set up an account at www.masteringchemistry.com according to the instructions that you can download from the CH142 website. There will be graded online homework problems due each week. The exact due date and time will be posted on Mastering Chemistry. For each assignment, be sure to view the grading details. These assigned problems will predominantly involve quantitative problem solving. We will automatically drop the lowest homework grade.

In addition, optional practice problems will be assigned from the back of the textbook chapter. Work through as many of these problems as necessary to make sure you have a good grasp of the material. *The key indicator of success in this course is the ability to work through problems without depending on an answer key or on the online 'hint' feature.*

Previous experience suggests that you will find the material in CH142 much more challenging than that in CH141. The key to success in this course is to do lots and lots of problems, and then do some more. Every additional problem should increase your understanding and improve your chances of success. Unless you have had extensive exposure to the material already, you will need to do more than the minimal problems to succeed in CH142. Some of the students with the best grades do ALL of the problems in the back of every chapter.

Electronic Devices:

Electronic devices, such as laptop computers, cell phones, and tablets can be useful educational tools to facilitate learning. However, used inappropriately, electronic devices can be a significant distraction to other members of your class. We request that students be respectful of the instructor and other students when using electronic devices during lecture or lab. Cell phones are not permitted in the lecture hall during exams for any reason.

In-Class Presentation:

During the last few classes, there will be student presentations of the descriptive chemistry material. You may choose your partner for this assignment, or we can assign you to one if you'd prefer. Each pair will be assigned a chemical family or element. The format of these presentations is modeled on PechaKucha Night, with 10 Powerpoint slides for 40 seconds each. Your talk should contain a) an introduction to the chemical family or element (historical overview); b) the major chemistry of this family or element; c) the importance of this family or element to everyday life.