

CH141 Fall 2017: Lecture Syllabus

Section A

M-W-F — 9 – 9:50 AM, Keyes 105

Instructor: Kevin Rice

Office: Keyes 313

Tel: x5763

e-mail: kevin.rice@colby.edu

Office hours: open or by appointment

Section B

M-W-F — 10 – 10:50 AM, Keyes 105

Instructor: Karena McKinney

Office: Keyes 211

Tel: x5767

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Office hours: M,Th 11-12 or by appointment

Course webpage: <https://wiki.colby.edu/display/CH141>

Required course materials:

- **Textbook:** Chemistry, The Central Science, 13th Edition, Brown, *et. al.*
- **Homework:** “MasteringChemistry” access code
- **Lab:** Bound laboratory notebook
- Calculator specified by the bookstore

Invitation:

Knowledge of chemistry is central to understanding and addressing many complex issues that we face as a society, from energy and food production, to global epidemics and climate change. We invite you to join us in an exploration of the fundamental chemical principles and scientific methods underlying current research and future breakthroughs in chemistry. We aim not only to challenge you and to encourage your appreciation for the complex and fascinating ideas at the heart of chemistry, but also to provide you with the tools you will need to succeed in this course, in future science courses, and beyond. In order to do so, we strive to create an open and collaborative classroom environment, to stimulate your interest and curiosity, and to actively involve you in the learning process. We urge you, the student, to take full advantage of these opportunities and engage deeply with the material and with us in order to maximize your understanding and appreciation of chemistry.

Course objectives and learning goals for CH141 students:

1. To gain a broad understanding of chemistry that leaves students prepared for organic chemistry and other chemistry courses, as well as courses in other scientific disciplines.
 - a. To learn to communicate using the nomenclature used by chemists.
 - b. To understand the basic structure of the atom and its subatomic particles.
 - c. To learn the basic principles of mass balance.
 - d. To understand the nature of the chemical bond.
2. To sharpen their quantitative skills in a scientific context.
3. To improve skills in solving problems that involve the integration and synthesis of new knowledge and to master the interface between narrative and mathematical problem solving.

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Grading:

- **Exam 1 (15%)**—Tuesday, October 3rd from 5:00-7:00 PM in Keyes 105.
- **Exam 2 (15%)**—Wednesday, November 1st from 5:00-7:00 PM in Keyes 105.
- **Exam 3 (15%)**—Thursday, November 30th from 5:00-7:00 PM in Keyes 105.
- **Final Exam (20%)**—Cumulative (date, time, and room to be assigned by registrar)
- **Laboratory (25%)**—Attendance is mandatory. You must pass lab to pass CH141. For more information on the Lab, please visit the CH141 webpage.
- **Homework (10%)**—See below for more information.

Anticipated lecture topics and approximate schedule:

Week	Textbook Chapter	Lecture Topic
1: Sept. 6	1	Introduction: Matter and Measurement
2: Sept. 11	2	Atoms, Molecules, and Ions
3: Sept. 18	3	Chemical Equations and Stoichiometry
4: Sept. 25	4	Aqueous Chemistry
5: Oct. 2	10	Gas Laws
6: Oct. 9	5	Thermochemistry
7: Oct. 16 (fall break)	5	Enthalpy and Calorimetry
8: Oct. 23	6	Electronic Structure of Atoms
9: Oct. 30	7	Periodic Properties of the Elements
10: Nov. 6	8	Basic Concepts of Chemical Bonding
11: Nov. 13	9	Molecular/Electronic Geometry
12: Nov. 20 (Thanksgiving)	10	Kinetic Molecular Theory
13: Nov. 27	11	Intermolecular Forces
14: Dec. 4	13	Properties of Solutions

Course policies:

1. Academic Integrity

The Chemistry Department policies regarding exams, attendance, and academic honesty will apply to this course. This information is available on the department website at: <http://www.colby.edu/chem/about/chemistry-attendance-and-exam-policy/>. You are encouraged to study and discuss course material with other students. However, anything you submit for a grade (including online homework and laboratory assignments) must be solely your own work. If you are unsure about what constitutes academic dishonesty in this course, it is safest to check with your lecture professor or laboratory instructor first.

2. Extra help

We welcome and encourage you to come talk to either of the lecture professors with any questions or concerns. Feel free to drop by their offices, attend office hours, or schedule an appointment. In addition to your professor, 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 (M-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 (*i.e.* after you've tried using the Chemistry Help Center and such), tutors are available—see Lisa Miller (Keyes 310; Immiller@colby.edu) to make such arrangements.

3. Exams

There will be three midterm examinations this semester (see dates above) and a final exam scheduled by the Registrar. Exam questions may come from lecture, lab, the text, and/or homework and will be a mix of short answer and numerical problems. Please note that you must show your work on arithmetical problems for full credit – partial credit is usually available. There will be practice exams available on the course webpage. These practice exams give you additional practice and let you gauge typical lengths of exams, but are not intended to serve as the primary resource for exam preparation. The actual exam will be, at most, only somewhat similar to the practice exam. Solutions to practice exams will be posted in advance of the exam review sessions.

There will be no make-up exams. If a student anticipates being away for a College activity on the evening of an exam, your lecture professor will try to make accommodations, such as having the exam administered by an athletic coach. It is the responsibility of the student to let her/his professor know, well in advance, of any potential conflicts and to make the necessary arrangements. Students who suffer a (verified) serious illnesses or family emergency will be excused from the exam. The grade for an exam missed due to an excused absence will be calculated based on performance on the other exams. Accommodations for other, non-college related activities, will not be considered. Should you miss an exam without *verified* medical cause or other prior approval, you shall receive a zero for that exam. Please review the departmental exam policy found on the website: <http://www.colby.edu/chem/about/chemistry-attendance-and-exam-policy/>

So as to encourage students to perform to the best of their abilities and to work towards improvement, all midterm exams will be adjusted based on future test scores. These grades will be adjusted *upwards* by replacing the exam score with the average of that exam grade and the subsequent exam grade (the final exam will be used to adjust the third exam grade). Note that this adjustment is automatic, and will only be applied if it improves your grade.

Some students may have approval from the Dean of Students' Office for time extensions on exams. All students, however, will have two hours to complete an exam that has been designed to take one-hour to complete. It is the responsibility of the student to communicate any *other* arrangements made with the Dean of Students' Office to her/his lecture professor *at the start of the semester* such that the necessary accommodations can be made.

4. Homework assignments

Homework assignments will be administered through MasteringChemistry (see course website for more information). All assignments and deadlines can be found at www.masteringchemistry.com – “CH141, Fall 2017 (CH1412017F)”. Homework assignments will collectively count for 10% of your final grade in CH141.

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A key to success in this course is to work through lots of problems without looking at an answer key. It is highly recommended that you do “pencil and paper” problems and not just the online problems, given that the exams are completed by hand. End-of-chapter problems will be assigned on the course website, but will not be collected or graded. Also, just knowing how to approach a given problem is not necessarily enough. Additional problems may be necessary to reach the point at which completing a set of problems can be accomplished within the timeframe of an exam. Unless you have had extensive exposure to the material already, you will probably need to do more than the assigned problems to succeed in CH141.

We are also likely to use active learning assessment in lecture via a platform called “Learning Catalytics”, to which you have access via MasteringChemistry. This may involve in-class quizzes and/or group work during lectures designed to help students develop problem-solving strategies in chemistry. Engagement with Learning Catalytics requires an internet-connected device, such as a smart phone, tablet, or laptop. If you do not have such a device, please contact your lecture instructor as soon as possible. Quantitative assessment from Learning Catalytics will contribute to your homework grade.