

GENERAL CHEMISTRY I

Lecture Syllabus

CHEM 211 Section 002

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Email Policy: I am happy to try and answer simple questions by email, but often with complex problems it's easier and quicker in person. All emails must be sent from your GMU email address.

Textbook/Homework: Top Hat General Chemistry Interactive Text (<https://tophat.com/marketplace/generalchemistry/> - \$60). This is an interactive digital textbook that I am a co-author of. To partner this, you will also need a Top Hat Lecture subscription (\$24 per semester) to access lecture content and in-class quizzes. A limited number of access codes for the textbook and Top Hat Lecture will be available from the university bookstore, but it is probably more convenient to purchase these directly online. An email will be sent to you regarding registering for Top Hat.

Strongly Suggested: Preparing for your ACS Examination in General Chemistry. The Official Guide. American Chemical Society, ISBN 0-9708042-0-2. Although not required, this is an additional useful resource you can purchase to help you study for the Final Exam.

I. Spring 2017 Schedule

Week #	Chapter	Topic	Events
1	1	The Basics of Chemistry	
2	2	Matter at the Atomic Level	
3	3	Molecules, Compounds and Their Composition	
4			
5	4	Chemical Reactions and Stoichiometry	Mid-Term I (Ch.1 - Ch.3)
6	4		Mid-Term Grade Posted
7	10	Gases	
8	5	Thermochemistry	
9	6	Early Experiments in Quantum Theory - The Nature of Light and Matter	Mid Term II (Ch. 4, 10, 5)
10	7	Quantum Theory, Atomic Structure, and Periodicity	
11			
12	8	Representing Valence Electrons: Lewis Structures of Atoms, Ions, and Molecules	
13	9	Theories of Chemical Structure and Bonding	
14			Mid-Term III (Ch. 6 - Ch. 9)
		Final Exam	

Introduction

Chemistry 211 is the first semester course of a two-semester sequence that provides the foundation of further studies in chemistry. To understand how the world works, we have to understand why physical and chemical changes occur on a molecular level. This course is designed to introduce you to the fundamental nature of modern chemistry by introducing you to concepts that chemists use to describe these physical and chemical changes.

These concepts include: introducing the basics of chemistry (atomic structure, the nature and expression of chemical reactions, gas theory, and heat flow in chemical reactions); describing the atomic and molecular properties of matter (atomic and subatomic structure, electronic configuration of atoms, bonding and geometry); and, defining important properties of the states of matter (esp. properties of liquids and solids).

Chemistry 211 is a challenging course, but with hard work not only can you achieve high academic performance, but you will learn skills and concepts that may change how you view the world around you. Many of these skills are transferable to your other science courses, and of course Chemistry 211 is a pre-requisite for all higher-level courses offered by the department.

The most important contribution to success in this course will be a disciplined approach to studying. The Top Hat environment in which you will read, learn, practice and problem solve is critical to your success. Attendance in lecture is not mandatory, but you will be significantly disadvantaged if you do not regularly show up for class.

II. Exams

Lecture evaluations will be based, in part, on three equally weighted mid-term exams each worth 15% of your final grade. These will be given during the semester at regular intervals as indicated on the proposed schedule. The actual dates of these exams will depend largely on how quickly we get through the course material. A final cumulative exam worth 30% of your final grade will also occur during the university's final exam period for the Fall semester. The final exam is cumulative and is provided by the American Chemical Society (ACS). The ACS final provides a national comparison of chemistry performance among US colleges.

Mid-term exams will be taken in a secure computer lab located at the COS Testing Center (link and location). Typically, you will be able to take these exams at your convenience during an announced 2-3 days window. The test is computer-based so you will not require a scan-tron

The final exam will be taken in our lecture hall at a time and date determined by the registrar's office. The final exam will be a paper exam and you will be required to provide your own scan-tron (882-E compatible).

Provisions for making up a missed exam are very limited and will be considered only for *extremely extenuating* circumstances. This will only be done for one excused absence. An absence will be excused **ONLY** if the student has provided the instructor with adequate documentation covering the excuse (e.g., note from a physician for an emergency doctor's visit). Excuses such as a slight headache or car troubles will not be accepted. Any non-excused absence will result in a zero score for the exam.

A valid GMU ID is required for all exams. Other forms of ID will not be accepted.

Students are responsible for providing their own calculators, pencils, and scan-tron forms for examinations. You should be very familiar with your calculator prior to exam dates. **PROGRAMMABLE CALCULATORS ARE NOT ALLOWED.** Sharing a calculator is not allowed.

ALL cell phones and communication devices are to be turned off, properly secured and stored away **BEFORE** the exams begin.

Keep in mind at all times that GMU is an Honor Code university. You should familiarize yourself with the Honor Code as soon as possible to prevent any possible violations that could significantly impact your future.

III. Quizzes

In-class quizzes will be regularly administered during lecture classes using Top Hat and will count 5% towards your final grade.

IV. Homework

As you are learning chemical concepts you will develop critical problem solving skills. Homework is an integral part of the learning process and is essential for sharpening problem solving skills and for preparation for exams.

Top Hat, the publisher of the textbook, has integrated practice and end-of-chapter style problems for you to work on. Both types of questions will be assigned and are described below

- In-chapter homework will consist of reading the assigned chapter and answering the embedded questions within each chapter. These should be attempted as you read the chapter because the book's content is often tied into these questions and provides you a way of practicing while you learn. In-chapter problems will be worth 10% of your grade.

- b. A number of end-of-chapter problems will be assigned for each chapter. These should be completed after reading through the chapter and after attempting the in-chapter problems first. End-of-chapter problems will be 10% of your grade.

V. *Grading Policy*

The final grade in this course will be determined by your cumulative percentage for all components of the course. While an absolute grading scale cannot be determined until all scores have been compiled and evaluated, in order to optimize your overall performance use the following scale as a rule of thumb, keeping in mind that the scale is subject to change during the course of the semester: 100-90% (A); 89-80% (B); 79-70% (C); <69% (D or F). Plus/minus grades are awarded with these broad ranges. Extra credit work will not be assigned under any circumstance.

Quizzes	5%
Homework	20%
Mid-Term Exams	45%
Final	30%
Total	100%

VI. *Tips for success*

Come to class. The more you can make it to class, the easier the material will be to understand. Verbal explanations of new concepts are often the most effective method of learning. Sometimes reading the book or lecture slides does not reveal all of the intricacies of a concept and you can sometimes miss the point.

It is critical you devote enough time to studying the material outside of class. You will get plenty of practice and homework problems in Top Hat, I will provide practice exams and there are lots of online resources for general chemistry courses. There should be no shortage of study materials for you so that you if you're prepared to do the work, you should hopefully see the results in your assessment grades.

While I am always available to help students, there are other places you can go. Your first stop for help should be the Chemistry Tutoring Center located in Rm 19 in the basement of Planetary Hall. Tutors are provided by the department to help you with any difficulties. If you're still stuck, then there are Learning Assistants who have been assigned to me to directly help you. I will inform you of their availability once their availability has been confirmed. If you're really stuck, then of course come see me during office hours or make an appointment outside of office hours.