

Chemistry 203: Advanced Reactivity, Fall 2018

Sections	Chem 203-3 and 4
Meeting Time	203-3: MWF 10:00-10:50 am 203-4: MWF 11:00-11:50 am
Location	OSB 423
Instructor	Dr. Annette Neuman
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Office	OSB 404
Office Hours	Mondays and Wednesdays 1-3 pm, Thursdays 9:45-11:45 am Or by appointment (e-mail me to set up a time)

Description Chemistry 203 is the third course in the chemistry curriculum at Oxford College. Chemistry 203 is based on a theme of the molecular orbital (MO) explanation of reactivity throughout the course. Chemistry 203 will build on the material you learned in Chemistry 150 and 202. The course will blend elements of organic, inorganic, and biomolecular reactivity, all with the underpinning concept of molecular orbital theory to explain concepts of reactivity. These concepts will be extended to d-electron elements, so that modern organometallic chemistry and catalytic cycles can be understood at the mechanistic level.

Oxford College is dedicated to a liberal arts education. The ultimate goal of a liberal arts education is not to merely provide a collection of knowledge, but rather to teach you how to think and how to learn. The study of science is an integral part of a liberal arts education, and mastery of chemistry will serve you well whether you pursue a career in science, healthcare, or another field. Success in Chemistry 203 requires a thorough understanding of fundamental principles and the ability to use these principles to analyze, classify, and predict. Medicine and other fields make similar demands. Your mastery of the principles of reactivity will not only provide you with valuable knowledge about chemical reactivity; it will also hone the critical thinking skills that will be invaluable in your future career.

Please note that Chemistry 203 and 203L are co-requisites; *you must be enrolled in both a lecture section and a lab section*. They do not need to be with the same professor.

- Learning Objectives** By the end of Chemistry 203, students will
1. Explain reactivity across all kinds of chemistry using the model of molecular orbital (MO) theory.
 2. Apply stereochemical principles to understand reaction mechanisms.
 3. Apply basic chemical principles to complex biological transformations.
 4. Explain the principles of catalysis and catalytic cycles.

Course Materials **Required:**
Organic Chemistry, 2nd Edition, by Jonathan Clayden, Nick Greeves, and Stuart Warren*
Organic Chemistry, 10th Edition, by Francis A. Carey and Robert M. Giuliano**

*The course will be primarily taught from the Clayden textbook, so you should be sure to get a copy. The library has copies on reserve if you can't get it right away.

**Electronic book strongly recommended. The Carey e-book is available from McGraw-Hill Connect.

Optional:
Solutions manuals for the textbooks

Bring a notebook and pen or pencil to every class. It is not necessary to bring your textbook.

Topics	Topic	Clayden Chapters
	Introduction to molecular orbital theory	4, 5
	Substitution and elimination reactions	15, 17
	Additions to ketones and aldehydes	6
	Enolate chemistry	20, 25, 26
	Electrophilic additions to alkenes	19
	Aromaticity and aromatic substitution	7, 21, 22
	Conjugate addition	22
	Cycloadditions	34
	Organometallic reactions and catalysis	40

Grading	Homework	10%
	Exams 4 @ 17%	68%
	Final exam	22%
	LearnSmart (bonus)	1%

Your final letter grade will be determined by the usual scale. *There is no automatic rounding or curve to course grades.*

	93		90		87		83		80		77		73		70		67		60	
A		A-		B+		B		B-		C+		C		C-		D+		D		F

In fairness to all students, grades must be based solely on your performance in the course. If you believe I have misgraded an assignment, please bring this to my attention immediately. Otherwise, **under no circumstances will grades be open for negotiation.**

Partial credit on exam questions will be awarded at my discretion and is not open for negotiation.

Homework Diligently working problems is one of the major keys to success in chemistry. To this end, you will be assigned homework. This may be a combination of online Connect homework from the Carey textbook and other assignments as are appropriate for the course materials. These problems will contribute significantly to your course grade, so it is important that you complete all of the assignments!

In addition to these graded assignments, practice problems from the textbooks will be posted on Canvas. While these problems will not be graded, you should work all of these problems to cement your understanding of the concepts in each module.

Exams We will have four 50-minute in-class exams. The exams will be given during the regularly scheduled class period.

Exam 1	Friday, September 21
Exam 2	Monday, October 15
Exam 3	Friday, November 9
Exam 4	Friday, December 7

Exams will consist of quantitative problems as well as short essay questions. Some exams may include a few multiple-choice questions. **Exams will cover all material in lecture in addition to assigned textbook readings and other supplemental materials.** Do the assigned reading!

Please use the restroom and get a drink of water before beginning an exam. Once the exam period begins, you will not be able to leave the room until you have turned in your exam.

Your final exam score may be used to replace your lowest in-class exam score with the following exceptions:

1. You have a zero on an exam due to missing the exam without a valid excuse.
2. You violated the Honor Code.

Final Exam

The final exam will be comprehensive. It will be given during the scheduled exam period:
10:00 section: Wednesday, December 19, 2 – 5 pm
11:00 section: Tuesday, December 18, 2 – 5 pm

Makeups

Makeup exams are not given after missed exams. In extenuating circumstances, it may be possible for a student to take an exam ahead of time, if I am given at least seven days' notice. Under no circumstances will a makeup exam be given *after* the scheduled time and date of the exam.

Review Sessions

Review sessions will be held one or two days before each exam at a mutually agreed upon time. These sessions are completely optional and will give you the opportunity to ask me any questions you may have about the current material.

Expectations

Electronics including but not limited to cellular phones, tablets, laptop computers, and mp3 players may not be used during class or exam periods. Any exceptions to this rule will be announced in class. Using these devices during class may adversely affect your course grade.

You should minimize your trips to the restroom or other reasons for leaving during class. You may excuse yourself from class if necessary, but this is distracting and should be kept to a minimum.

Honor Code

Academic integrity is crucial to the Oxford community. Therefore, as in all courses, you will be expected to adhere to the Oxford College Honor Code. Academic misconduct, as defined in the honor code, will not be tolerated and will be immediately referred to the Honor Council. **Collaboration is not permitted on exams.**

Accommodations

If you have a documented disability and have anticipated barriers related to the format or requirements of this course, or presume having a disability (e.g. mental health, attention, learning, vision, hearing, physical or systemic), and are in need of accommodations for this semester, you are encouraged to contact the Office of Accessibility Services (OAS) to learn more about the registration process and steps for requesting accommodations. If you are registered with OAS, please submit your documentation letter to me during the first week of the semester so that I can make appropriate accommodations.

Attendance

All students are expected to attend all lecture sessions. However, I recognize that emergencies can arise that may result in absence from class. You should notify me if an absence is due to illness or other emergency. You are responsible for all material covered in lecture if you are absent. Please get the notes from a classmate.

Besides missing class, these also count as an absence:

1. Being late to class three times. If you come in late, it is your responsibility to see me after class to ensure that you are marked as being tardy and not absent. No adjustments will be made at a later time.
2. Coming to class more than 15 minutes late.
3. Leaving class early.

4. Going in and out of class.
5. Being inattentive or working on other assignments in class.

You are allowed 3 *absences* from lecture. If you exceed the 3 absence limit for *any* reason, by any combination of absences and tardies, you will:

1. Lose 1 point for the next absence (absence 4).
2. Lose 2 points for the next absence (absence 5).
3. Lose 3 points for each additional absence.

Note that each point deducted is a **percentage point** of your final grade. Therefore, excessive absences will have a significant negative impact on your course grade.

Canvas

The Chemistry 203 page on Canvas will be the primary means of communicating outside of class. It will also house supplementary course resources. **Please be sure to check the course page daily.** You may want to install the Canvas app on your smartphone for easy access.

Student work

Occasionally I will photocopy assignments that you turn in for inclusion in my teaching portfolio. Furthermore, student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.

Tips for Success: Chemistry 203 is an intensive course and requires time. To perform well in this course, you must manage your time appropriately. You must have a proper study plan, beginning from the first day of class.

1. Develop a good attitude. Chemistry can be both fun and interesting if you allow it to be.
2. **WORK PROBLEMS!** The assigned problem sets are a good place to start, but you should also work problems from the textbook. Don't try to work the largest volume of problems possible; rather, work each problem mindfully. Ask yourself, "What concepts does this problem relate to? If I changed one variable, how would that change the outcome?" Considering questions like this will help you connect topics in your brain, which will serve you well in this class and beyond.
3. Manage your time and your life. There are LOTS of extracurricular activities to get involved in at Oxford. None of them are an excuse for poor performance in the classroom. Remember why you are here.
4. Our class time is limited. Therefore, I will not tell you everything you need to know. Class time is for working through new problems and clearing up complex concepts. **You are responsible for all the information in the assigned reading**, regardless of whether it is discussed in class.
5. The average student will need to set aside *at least* six hours a week to study for this class. However, students come into this class with all sorts of different backgrounds. You may be able to get away with studying less than this, or you may need to devote much more time in order to succeed. Do not compare yourself to your classmates. Do what YOU need to do in order to succeed.
6. Memorizing facts is important to establish a basis for your knowledge, but is not sufficient for success in Chemistry 203. You must be able to use your knowledge to think logically and analytically. Many of the test questions will require you to apply your knowledge to unfamiliar situations.
7. Come to class every day, stay alert, and take good notes.
8. Read the assigned material before each class, read it again after each class, and read it a third time before the exam.
9. You may find it helpful to form a study group with 2-3 classmates and work problems together.
10. The pace of this course is rapid. Stay current with the material and don't get behind.