

CHEMISTRY 150 - Fall 2017

Instructor: Sean J. Mo, Ph.D.

Office: OSB 424

Phone: 770-484-4514

e-mail: sean.mo@emory.edu

Class Schedule: Tuesday/Thursday – 11:50AM – 1:30PM

Classroom: OSB 115

Office hours: Tuesday, Wednesday, Thursday: 2:30 – 4:30 PM

Text and Materials:

Class:

- *Chemistry: Atoms First*, 3rd ed. by Burdge and Overby, McGraw-Hill 2018 (Required - ebook)
- *Organic Chemistry*, 10th ed. by Carey, McGraw-Hill 2016 (Required - ebook)
- *ALEKS* – web-based A.I. assessment and learning system (Required)
- A *non-programmable* scientific calculator that can handle power-of-ten scientific notation for numbers (Required)
- An open mind, willingness to learn, and dedication. (Definitely Required)

Lab:

- Laboratory manual, available on Canvas
- Carbon-copy lab notebook, sold at the Oxford Bookstore
- Approved safety glasses

} You must have all three items for lab before your first lab.

Course Description: In this course, you will explore introductory topics in chemistry. The course is designed to be a gateway course for the sciences: chemistry, biochemistry, biology, NBB, physics and etc. The topics covered in the lecture portion of the class will range from the scientific method, significant figures, concept of mole, structure of atoms, ionic and molecular compounds, quantum theory and electromagnetic radiation, the periodic table, simple unit cells, chemical bonding, molecular geometry, resonance theory and intermolecular forces. The laboratory portion of the class will cover topics on stoichiometry, reactions in aqueous solutions, molarity, acid-base reactions, titration, UV-Vis spectroscopy, data analysis and introduction to laboratory research methods.* At first glance these topics might sound foreign or daunting; however, think of it as how these topics can begin to describe the microscopic and macroscopic chemical world that surrounds us.

Furthermore, in order to connect the individual topics to how we experience them in the real world, selected real world applications of chemistry in the field of medicine, environment and food sciences will be utilized throughout the course. This interdisciplinary exploration approach will assist with applications of individual chemistry topics to tangible examples and case studies.

Learning Outcomes: At the conclusion of this course, the students will have gained expertise in both quantitative and qualitative reasoning and problem solving skills. Also, the students will be able to ask critical questions related to the real world issues related to the field of medicine, environment and food sciences. Furthermore, the laboratory component of the course will give the students the necessary hands-on skills to master chemistry applications related to aforementioned topics.

* Comprehensive topics list is available on Canvas.

Class: This class will utilize lecture, discussion, group work and laboratory experiences to enhance the students understanding of the materials covered. In this course, when needed, additional lecture materials will be posted on the class Canvas site, or handed out in class. The purpose of posting the lectures and handing out the crucial lecture material is to allow you to listen to the lecture and class discussion. It is not to allow you to skip class and assume that you can learn everything from the posted lectures. As you will see, everything that we do in class is not posted on the web.

Assignments: Problems will be assigned on Canvas through McGraw-Hill Connect and ALEKS. Each assigned homework will be automatically graded online. For you to be successful in this course, completion of homework on due dates will be necessary as the completed materials will relate to in-class discussion topics. As the old adage goes, “practice makes perfect.” Personally, I prefer, “*le hasard ne favorise que les esprits prepares*” by Louis Pasteur. (Yes, it’s the famous French scientist.)

Participation: Prompt attendance is expected at every class meeting. Your participation grade will be largely based on your attendance and group discussion/problem solving.

** Please do not use your mobile/smart phone during class. Texting or using apps on your phone will be disruptive not only to your learning, but also to those that are around you. If you are caught using the phone for the first time, you will be given a **warning**. Your grade will be deducted **10 points** per citation starting on your **second offense**.

Proper Behavior in Class: Class is a learning environment; expected behavior includes:

- Coming to class on time and being attentive in class.
- Participating in class.
- Not going in and out of class (unless you're sick) – please get a drink or use the restroom before or after class.
- Not eating or drinking in class. Water bottles are acceptable.
- Not working on material for another class.
- Not bringing a laptop computer to class. If there is a reason you need a computer to assist you in class, make arrangements with me.
- Bringing your textbook and all handouts to each class.

Not respecting the learning environment in class can affect your grade and future recommendations.

Attendance:

- Students are expected to attend all class meetings. However emergencies can arise which may result in absence from class. It would be a good idea to notify me if an absence is due to illness or other emergency. You are responsible for all material covered if absent.
- You are allowed three (3) absences in class. If you exceed the 3 absence limit for any reason, by any combination of absences or tardies, you will:
 - (a) Lose 1% of your total grade for the next 2 absences (numbers 4 and 5);
 - (b) Lose 2% points for each additional absence (numbers 6 and up).

These points will be deducted from the final average. Note that there are **no** “excused” absences.

- Besides missing class, these also count as an absence:
 1. Being late to class TWICE. (This means coming in after I’ve finished checking the class roster.) If you come in late, it is your responsibility to see me immediately 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 in class or working on other assignments in class

Quizzes: There will be unannounced, short quizzes throughout the semester to reinforce the contents covered in class. These quizzes will take place at the beginning of the class. There will NOT be make-up quizzes. Your quiz scores will be tabulated at the end of the semester and count towards your final grade.

Exams: There will be four (4) 65-minute exams throughout the semester. There will NOT be make-up exams regardless of the reason an exam was missed. If you miss an exam and present me with an acceptable excuse, the grade on the final exam will count in place of the missed exam grade. You must notify me by the day and starting time of the exam that you will not be present and you must give me the reason for the absence. If the excuse is not considered acceptable, the missed exam grade will be a zero.

In general, illness or an emergency situation is the only acceptable excuses for missing an exam. If you are going to miss an exam for a religious holiday or for a school-related activity, you must make arrangements to take the exam early. Missing an exam also counts as an absence in the course. The grade on the final exam can only replace one missed exam; additional missed exams will receive a grade of zero.

Anticipated Exam Schedule:*

Exam #1 September 14th, 2017 – Thursday
Exam #2 October 5th, 2017 – Thursday
Exam #3 November 2nd, 2017 – Thursday
Exam #4 November 30th, 2017 – Thursday

*Exam dates are subject to change. The contents to be covered in each exam will be announced in class.

Final Exam: The final exam schedule will be on December 8th, Friday from 9:00 AM – 12:00 PM in OSB 115. The final examination is mandatory and will be *comprehensive*. The contents of the final examination will be announced in class. The final examination will not be returned; however, you are welcomed to view your grade in the following semester.

Grading:	Items	Points	Date	Materials Covered
	• Exam 1	95	Sept. 14 th , 2017 (Thu.) 11:55 AM - 1:00 PM	Exam Topics 1
	• Exam 2	95	Oct. 5 th , 2017 (Thu.) 11:55 AM - 1:00 PM	Exam Topics 2
	• Exam 3	95	Nov. 2 nd , 2017 (Thu.) 11:55 AM - 1:00 PM	Exam Topics 3
	• Exam 4	95	Nov. 30 th , 2017 (Thu.) 11:55 AM - 1:00 PM	Exam Topics 4
	• Final Exam*	180	Dec. 8 th , 2017 (Fri.) 9:00 AM - 12:00 PM	Final Exam Topics (All)
	• Quizzes (x4)	80	Unannounced/In class	
	• Assignments	40	based on attendance, ALEKS and McGraw-Hill Connect	

Total Points: 680

* Your final exam grade may be used to replace your lowest exam grade with the following exceptions: 1) If you have a zero on an exam due to missing the exam without a valid excuse no grade may be replaced, including the zero. 2) If you missed an exam with an accepted excuse only the grade for the excused exam may be replaced. 3) If you are found guilty of an Honor Code violation by the Honor Council, the usual penalty is an F in the course. If you are assigned an F on the exam instead, that grade will be a zero and no exam grade will be replaced by the grade on the final exam.

Course Grading Scale

	B+: 89.9-87.0%	C+: 79.9-77.0%	D+: 69.9-67.0%
A: 100.0-93.0%	B: 86.9-83.0%	C: 76.9-73.0%	D: 66.9-63.0%
A-: 92.9-90.0%	B-: 82.9-80.0%	C-: 72.9-70.0%	F: below 63.0%

*NOTE: You must score at least a grade of 50% on the final exam to pass the course. If you score below 50% on the final exam, you will receive an F in the course regardless of your average.

Feedback

Feedback is given in a variety of ways – dependent on the type of assignment. Below is the key for feedback given on quizzes/exams/lab reports.

CALC – calculation error
 CT – inadequate understanding of concept
 CVN – problems with conversion factor
 FML – incorrect formula or wrong use of formula
 SF / U – problems with significant figures and/or units

For formal reports, feedback is given in the form of a grading rubric, which provides details on the grading of each area assessed.

Error in Grading: If there appears to be an error in grading, submit your request for reconsideration in *writing* via e-mail within **48 hours** after the exam/quiz/homework is returned. Note: when you submit your graded item for a review, all of your work on the exam/quiz/homework will be reviewed and re-graded.

Review Sessions: Regular review sessions run by the SI and/or instructor will be scheduled prior to the exams. It is recommended that students who are having difficulty in class to see the instructor during the office hours for additional help.

Canvas: Canvas will be the primary means of communication outside of class. It will also contain supplementary course resources.

Available Resources:

- **Need help?** – please come to office hours at the first sign of trouble. Tutoring hours are listed on Canvas.

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.

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 exams, you may not use any material not distributed with the exam itself except for your own calculator and pencils/pens. You may not have any other material with you – this includes books, notebooks, book bags, papers, etc.; they must be left at the front of the room. You may not have a cell phone or other electronic device with you; if you bring these, they must be left at the front of the room also (and must be turned off). During an examination, you may not give or receive assistance.

On assignments for outside class, the work is to be your work alone – you may not give or receive any assistance, and you may use only materials authorized.

Since absences and tardies can affect your grade, giving false information regarding absences or tardies is a violation of the Honor Code. Note also that the Oxford College Honor Code expects students to report any violations of the Code they know of. See the Honor Code Pledge handout for more information.

Chem150 Learning Objectives – Fall 2017

- The scientific method
- The structure of the atom, including the history
- Precision and accuracy
- Energy
- Conversion between different measuring systems
- Significant figures
- Subatomic particles and structure of the atom
- Isotopes
- The periodic table
- Moles and molar mass
- Quantum theory and electromagnetic radiation
- Electron configurations
- Lewis dot symbols
- Ionic substances, including naming
- Crystals – simple unit cells
- Covalent substances, including naming
- Electronegativity and bond polarity
- Lewis structures
- Resonance
- Formal charges
- Bond energy
- Molecular shapes and polarity
- Hybridization of orbitals
- Molecular orbitals
- Newman projections and conformations
- Line structures
- Stereochemistry
- Intermolecular forces
- Other topics, time permitting, may include coordination compounds and stoichiometry

The chapters we will cover in the two ebooks, the sections, and the sequence will be announced as we go.