

CHEM 0910 Fundamental Principles of Chemistry

2025 Fall Semester (TERM 2261) – Classroom Alumni Hall 7th Floor

Lecture: Monday, Wednesday, and Friday 1:00–1:50 pm

Recitation and Laboratory Required (MWF 8–11:50 am and Th 2–5 pm)

INSTRUCTOR

Tim Tseng

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Office: CSC 107

Office Hours: 1) After MWF lecture at 2 pm or 2) by appointment

MATERIALS

1. **Textbook:** Timberlake, K. C. (2018) *Chemistry: An Introduction to General, Organic, and Biological Chemistry*. Pearson. (*optional*)
2. **Labflow**
3. **Splash Goggles:** Purchased at bookstore to ensure safety policy compliance
4. **Flame-Resistant Lab Coat:** Purchased at bookstore to ensure safety policy compliance

Recommended: A set of Molecular Models

COURSE OVERVIEW

This course introduces fundamental concepts in science, chemistry, and organic chemistry. The course will generally follow the topics suggested by your textbook. However, you should not expect *or want* a simple recapitulation of the textbook examples. Use the lecture in two ways: 1) as another perspective on the concept map that connects the examples together and 2) as a chance to see a more experienced learner in action.

The exams will test your ability to project and apply the broad concepts to new and unfamiliar scenarios. Your grade will be based on your cumulative performance. Only exam average and range values are determined for any individual examination. Letter grades are not assigned for individual examinations.

Lab Assignments:					20%
Quizzes:	Weekly during your recitation, lowest quiz grade is dropped				5%
Examinations:					
	I. Wednesday	Sep 24	1:00–1:50 pm	Alumni Hall 7th Floor	10%
	II. Wednesday	Oct 22	1:00–1:50 pm	Alumni Hall 7th Floor	15%
	III. Wednesday	Nov 19	1:00–1:50 pm	Alumni Hall 7th Floor	20%
Final Exam:	Wednesday	Dec 10	10:00–11:50 am	???	30%

No make-up exams will be given. You must be in your seat, ready to take the exam at 1:00 pm. If you are late to the exam, you will only be allowed to use the remaining exam time. To provide the quietest atmosphere and to account for all students taking the exams, you will turn in your exam at the end of the examination period (1:50 pm) as you are exiting the classroom.

The material we cover will build on previous knowledge; *all exams will be cumulative*.

On Assigning Grades

I do NOT use normative grading (i.e., a pre-set “curve” where x% will get “A”, y% will be “B”). *If everyone performs above a certain level, then everyone will receive a good grade.* The ultimate determination of grades will be based on the chemistry you write down on the exams. This is subject to change, but my aim is 100–80% = “A+/A”, 79–65% = “A-/B+/B”, and 64–50% = “B-/C+/C”.

On Cheating

What can I say that you do not already know? **Do not do it. It is not worth it.**

Academic dishonesty, in any form, will not be tolerated. Academic misconduct includes (but is not limited to) using unauthorized resources (e.g., cell phones and notes) on exams, plagiarism, and altering graded exams. Documented cases will be sent to the Dean’s Office for action.

From Professor Brian Coppola:

The decision to cheat (better: not to cheat) should not be based on the likelihood of getting caught. As professors, and as an institution, we will only have done our jobs well if you do the right thing – *even when no one is watching*. Honesty, integrity, and trust are big ideas, and they are hard-won prizes gained through large numbers of small defensible decisions. In fact, we need to be on the lookout for misconduct precisely because the decisions made by most students are the right ones, and as leaders we need to support them and act on their – that is, your – behalf.

Learn to do the right thing – *even when no one is watching*.

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On Regrade

We do make legitimate errors in grading, and we are glad to correct these. We do our best to grade these examinations with consistency and fairness. Please check your exams for adding/grading (clerical) errors. Regrade appeals (**in writing only**) will be considered for one week after exams are returned. **Except for clerical errors, regrade requests will be a reevaluation of the entire exam.**

DISCUSSIONS

Whether you are well prepared or under prepared, there is always something to learn.

I. Recitation: A weekly recitation will be held during the first hour of your scheduled lab time. Recitation activities will include problem-solving activities, reviews, and Q&A sessions.

II. Addition TA Help Hours: Many one-hour weekly recitation sessions will be led by past, successful students. You are *highly encouraged* to attend at least one session on a weekly basis. Times will be announced.

LEARNING TIPS

- Do the **recitation worksheets!**
- Do not wait until just before exams to begin learning... use the textbook and practice problems to help you know what you know, and know what you do not know!
- Read ahead for general meaning, multiple contacts of the same information make better connections. Do not feel compelled to understand every word the first time.
- Learn the difference between “information” (*the multiplication tables*) and “understanding” (*creating and solving new multiplication problems*).
- Ideas are NOT just things to make lists of, ideas should be tried! At every point in the course, you should be able to write the name of a topic on a blank sheet of paper, close all of your books and notes, and then explain the topic (like you were teaching a lesson) in words and with examples you create. Teaching is learning and learning how to teach will help you develop test-taking skills.
- Do problems at a *different* time from when you are reading about ideas. Work back and forth between reading time and problem-solving time as separate blocks. Do not link reading about a topic with all of its problems or else you will find it difficult to identify it again when you see it.
- Problems are solved by (1) identifying and (2) applying. If you can't do (1) identifying, then it does not matter how well you can do (2) applying. You need to figure out what a problem is about before you can actually solve it!

Many sources are available to you in this course. One key action is to determine that set of them that works best for you! Do not be afraid to try new things even if others are not performing them.

(1) Your textbook; (2) textbook problems; (3) recitation; (4) open discussion; (5) problem sets; (6) form your own groups around discussing chemistry and teaching each other!

CANVAS

The online course management system, Canvas (<https://canvas.pitt.edu>), will be used as a mechanism for communicating with you.

DISABILITIES

Students needing reasonable accommodations should notify the Office of Disability Resources and Services during the first week of class. The DRS office will provide specific information on the University of Pittsburgh's ADA policy and application procedures to the student. More details can be found at <https://www.studentaffairs.pitt.edu/drs>. It is your responsibility to notify me of any accommodations in a timely manner (at least one week in advance).

CLASSROOM RECORDING

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion, and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

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2025 Fall CHEM 0910	Monday	Wednesday	Friday	Lab Activity
Week 1 - 8/25	1. Introduction + Measurements (Lab 1)	2. Dimensional Analysis (Lab 1)	3. Significant Figures + States (Lab 1)	1. Safety and Locker Check In
Week 2 - 9/01	Labor Day	4. Energy (No Lab)	5. Atom, Element, and Periodic Table (/No Lab)	
Week 3 - 9/08	6. Bonding + Octet (Lab 2)	7. Connectivity (Lab 2)	8. Formal Charge + Complexation (Lab 2)	2. Measurement
Week 4 - 9/15	9. Resonance (Lab 3)	10. Resonance Part 2 (Lab 3)	11. Geometry (Lab 3)	3. VSEPR
Week 5 - 9/22	12. VESPR (Lab 4)	Exam 1 (Lab 4)	13. Intermolecular Forces (Lab 4)	4. Stoichiometry
Week 6 - 9/29	14. Stoichiometry (Lab 5)	15. Gas Laws (Lab 5)	16. Equilibrium/Solution (Lab 5)	5. Aspirin
Week 7 - 10/06	17. Acid/Base + Arrows (No Lab)	18. pH and pKa (No Lab)	Fall Break	
Week 8 - 10/13	19. Explaining Acidity (Lab 9)	20. Acidity and Buffer (Lab 9)	21. (Lab 9)	9. pH
Week 9 - 10/20	22. Alkene Addition (Lab 10)	Exam 2 (Lab 10)	23. Energy Diagram (/Lab 10)	10. Titration
Week 10 - 10/27	24. Naming (Lab 6)	25. Stereochemistry (Lab 6)	26. Chirality (Lab 6)	6. Functional Groups
Week 11 - 11/03	27. Stereochemical Relationships (Lab 7)	28. Substitution (Lab 7)	29. Acetal (Lab 7)	7. Esters
Week 12 - 11/10	30. Carbohydrate (Lab 8)	31. Carbonyl Substitution (Lab 8)	32. Ester (Lab 8)	8. Soap
Week 13 - 11/17	33. Amide (No Lab)	Exam 3 (No Lab)	34. Oxidation (No Lab)	
11/24 - Thanksgiving				
Week 14 - 12/5	35. Reduction (Lab 12)	36. Proteins (Lab 12)	37. Nucleic Acids (Lab 12)	12. Nucleic Acids + Check Out
12/08 Final Exam	Final Exam - 12/10 at 10 am			