

LAKE DALLAS HIGH SCHOOL AP CHEMISTRY

Instructor: Dr. Fionn Corcoran

Instructor Email: fcorcoran@ldisd.net

Instructor Phone: 940-497-4031

Text: Chemistry 9th Edition, Zumdahl (optional)

A graphing calculator is strongly recommended; however, it is not required. Non-graphing scientific calculators will be provided.

Course Description

The AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first college year. This course is taken with the idea in mind that *students will take the AP Exam* to receive college credit or placement at the student's college of choice. For some students, this course enables them to undertake, in their first year, second-year work in the chemistry sequence at their institution or to register in courses in other fields where general chemistry is a prerequisite. For other students, the AP Chemistry course fulfills the laboratory science requirement and frees time for other courses. Such credit and placement tied to the AP Chemistry exam could lead to students' readiness for and engagement in the study of advanced topics in subsequent college courses and eventually the achievement of a STEM degree and successful career.

How to Contact Dr. C.

Tutorials: Any Morning or Tuesday/Thursday After School **OR** by appointment (email)

Conference Period: 6th Period

Email: I can answer brief questions digitally.

1. Include "AP Chem", your class period, and a brief description in the subject line. (e.g. AP Chem 3B Missing Homework)
2. Keep your message brief and direct. (Just a few sentences)

Attendance & Warm-Ups

There will be a daily warm up question. The warm-up question will be an AP Chemistry multiple choice question from a previous year, so it is highly encouraged to record the question for your own notes; they may (they will definitely) reappear on your Unit exams in my class. These questions are not graded; their purpose is for the instructor to quickly assess understanding and for students to gain experience with AP-style multiple choice questions.

Homework

Homework packets will be assigned for each unit. Questions from the homework may (they will definitely) appear on quizzes and exams. Homework packets will be given to students on the first day a unit begins, and will be due the day of their respective exams.

Labs

At least one laboratory or other type of activity is scheduled for each unit. These labs and activities are designed to support the content being studied in class and reinforce your understanding of concepts. Each activity will be accompanied by a hand-out, which will be due when specified by me.

You will be expected to acknowledge the Laboratory Safety Contract in order to participate in labs.

Exams & Quizzes

Exams will be administered at the end of each unit (see the schedule below). Exams will consist of 50% multiple choice questions and 50% free response questions so as to mirror the AP exam as closely as possible. Exams are NOT open-note. **The only approved materials you may use for exams are one of my sleeved AP Chemistry periodic tables, one of my sleeved AP Chemistry formula sheets, and a calculator.**

IMPORTANT: If you miss a scheduled exam, you MUST email me to schedule a time to come in to make up the exam. Due to the length and depth of exam content, make-up exams must be taken after school to ensure students will have enough time to complete them.

Quizzes will generally be administered once a week. Quizzes will be mostly free response AP questions, or multiple choice AP questions adapted into free-response questions. The weekly quiz will take place during the last 20 minutes of class. **Quizzes will be open-note, but you may NOT share notes.** Keep in mind that the homework problems (from the Unit Packet) are designed to help you succeed on your quizzes, and you are allowed to use them to help you on quizzes.

Extra Credit/Exam Corrections

Open-note exam corrections will be allowed after each exam, but may ONLY be completed if the student has completed the homework for the Unit Exam they wish to correct. Keep the following in mind:

- Corrections may ONLY be completed during my tutorials (NOT during my class period--you will have PLENTY of other practice to work on!).
- Unit Exams will not be returned to you to keep, and will only be returned for you to review during my tutorials.
- Your graded exam and corrections will not leave my classroom, and you will not be permitted to use your phone while working on exam corrections.
- Exam corrections will earn 50% of the missed points back (so, for example, if you earned a raw score of 60 on the test and submit corrections for missed questions, you may earn an amended exam score of 80).
- There is no minimum or maximum requirement for exam corrections...If you received a raw 95 and want to correct a couple missed questions to earn a 97.5-98, you are free to do so.
- ALL corrections will be required to be submitted on a separate sheet of paper. Corrections on multiple choice questions will require side-work/explanation rather than simply writing the letter answer of your new answer choice.
- Unfinished exam corrections will be kept by me in the classroom if you do not finish them in one tutorial session.
- You may only complete and submit exam corrections for exams from the PREVIOUS subunit (so, for example, you may complete corrections for the UNIT 1 EXAM as the class is currently studying Unit 2, and I will not accept UNIT 1 EXAM corrections after the UNIT 2 EXAM has been administered).

The AP Exam

Taking the AP exam in the spring is optional, however, if you take it, you will be exempt from MY comprehensive final exam in the spring semester (trust me, you don't want to take my final. Take the AP exam! It's a really important experience.).

Late Work Policy

Work turned in after the due date is considered late and points will be deducted accordingly.

- 1 day late: 10 point deduction
- 2 days late: 20 point deduction
- 3 days late: 30 point deduction

There are exceptions to all rules (emergencies, personal illness, family deaths). Please communicate with me if something happens in your life which prevents you from completing assignments, and we will work together to set new due dates and catch up with the rest of the class.

Academic Dishonesty

Cheating undermines both the cheater and class morale. Avoid doing yourself this disservice: it carries heavy consequences. Please see the Student Handbook to find more information about academic dishonesty.

How to Succeed in AP Chemistry

Take notes by hand. While society is moving toward the use of computers and away from writing by hand, there are many chemistry concepts that cannot be illustrated by typing notes. Additionally, there are several studies that prove note-taking by hand results in better retention of class material.

Stay organized. A three ring binder will be a very helpful tool in this class. You will receive notes and exercises in many different forms (your text, online videos, lecture notes, etc.). A binder is a great way to keep these many different forms of learning collected and organized.

Do your homework and your reading. Practice, Practice, Practice.

Form a study group. Working with a study group outside of class will help you learn the material deeply. Take advantage of your opportunity to both challenge and assist your peers by studying with them.

Use electronic resources. As the school year progresses, I will be suggesting apps and other electronic resources to assist you in preparing for your AP exam. However, Google can provide a wealth of extra practice problems *once you have exhausted those in your homework* – Don't be afraid to google!

Tentative Schedule

Date	To-Do In Class
8/13	Syllabus - Introduction of course and procedures/policies CollegeBoard Sign-Up and Exam Registration Introductions and Getting to Know You LAB: Hardboiled or Raw?
	Unit One: Atomic Structure and Properties
8/14	1.1 Moles and Molar Mass
8/15	1.2 Mass Spectroscopy of Elements
8/18	1.3 Elemental Composition of Pure Substances QUIZ #1 (1.1 & 1.2)
8/19	1.4 Composition of Mixtures
8/20	LAB: Composition of Mixtures
8/21	
8/22	1.5 Atomic Structure and Electron Configuration
8/25	1.6 Photoelectron Spectroscopy
8/26	1.7 Periodic Trends QUIZ #2 (1.4-1.6)
8/27	1.8 Valence Electrons and Ionic Compounds
8/28	Review for Unit 1 Exam
8/29	UNIT 1 EXAM - MCQ
9/2	UNIT 1 EXAM - FRQ
	Unit Two: Molecular and Ionic Compounds
9/3	2.1 Types of Chemical Bonds 2.2 Intramolecular Force and Potential Energy **Hand out list of shapes to memorize
9/4	2.3 Structure of Ionic Solids 2.4 Structure of Metals and Alloys QUIZ #3 (2.1-2.2)
9/5	2.5 Lewis Diagrams
9/8	2.6 Resonance and Formal Charge
9/9	2.7 VSEPR and Bond Hybridization QUIZ #4 (2.3 - 2.6)
9/10	LAB: VSEPR Activity
9/11	Review for Unit 2 Exam
9/12	UNIT 2 EXAM - MCQ
9/15	UNIT 2 EXAM - FRQ
	Unit Three: Intermolecular Forces and Properties
9/16	3.1 Intermolecular Forces
9/17	3.2 Properties of Solids 3.3 Solids, Liquids, and Gases
9/18	3.4 Ideal Gas Law
9/22	LAB: Molar Mass of Butane
9/23	3.5 Kinetic Molecular Theory QUIZ #5 (3.1 - 3.4)
9/24	3.6 Deviation from Ideal Gas Law
9/25	3.7 Solutions and Mixtures QUIZ #6 (3.5-3.6)
9/29	3.8 Representations of Solutions
9/30	3.9 Separation of solutions and mixtures chromatography

10/1	LAB: Paper Chromatography
10/2	3.10 Solubility
10/3	3.11 Spectroscopy and the Electromagnetic Spectrum Quiz #7 (3.7-3.10)
10/6	3.12 Photoelectric Effect
10/7	3.13 Beer-Lambert Law
10/8	AP EXAM PRACTICE TEST (Units 1-3)
10/14	UNIT 3 EXAM - MCQ
10/15	UNIT 3 EXAM - FRQ
Unit 4: Chemical Reactions	
10/16	4.1 Introduction for Reactions 4.2 Physical and Chemical Changes
10/17	4.3 Representations of Reactions
10/18	4.4 Net Ionic Equations
10/20	4.5 Solubility Rules & Precipitates QUIZ #8 (4.1 - 4.4)
10/21	4.6 Stoichiometry
10/22	4.6 Stoichiometry Continued
10/23	4.7 Introduction to Titration
10/24	4.8 Acid-Base Reactions
10/27	4.9 Oxidation-Reduction Reactions QUIZ #9 (4.5 - 4.8)
10/28	LAB: Titration of a Strong Acid with a Strong Base
10/29	
10/30	FRQ Practice
10/31	UNIT 4 EXAM REVIEW
11/3	UNIT 4 EXAM - MCQ
11/4	UNIT 4 EXAM - FRQ
Unit 5: Kinetics	
11/5	5.1 Reaction Rates
11/6	5.2 Collision Model
11/7	5.3 Elementary Reactions
11/10	5.4 Reaction Energy Profile
11/11	5.5 Catalysis QUIZ #10 (5.1 - 5.4)
11/12	5.6 Multistep Reaction Energy Profile
11/13	5.7 Introduction to Reaction Mechanisms
11/14	5.8 Reaction Mechanism and Rate Law
11/17	5.9 Steady-State Approximation
11/18	5.9 Steady-State Approximation Continued
11/19	5.10 Rate Law with Initial Rates Quiz #11 (5.5 - 5.8)
11/20	Lab: Iodine Clock Reaction
Thanksgiving Break	
12/1	UNIT 5 EXAM REVIEW
12/2	UNIT 5 EXAM - MCQ
12/3	UNIT 5 EXAM - FRQ
Unit 6: Thermodynamics	
12/4	6.1 Endothermic and Exothermic Processes Lab: Endothermic vs Exothermic
12/5	6.2 Energy Diagrams
12/8	6.3 Heat Transfer and Thermal Equilibrium
12/9	6.4 Heat Capacity and Calorimetry

12/10	Lab: Coffee Cup Calorimetry
12/11	6.5 Energy of Phase Changes
12/12	6.6 Introduction to Enthalpy of Reaction QUIZ #12 (6.1 - 6.4)
12/15	Review: Chapters 1-2
12/16	Review: Chapters 3-4
12/17	Review: Chapters 5-6
12/18	Midterm
12/19	Midterm
	WINTER BREAK
1/7	6.7 Bond Enthalpies
1/8	6.8 Enthalpy of Formation
1/9	6.9 Hess' Law
1/12	Lab: Hess' Law QUIZ #13 (6.5 - 6.8)
1/13	UNIT 6 EXAM REVIEW
1/14	UNIT 6 EXAM - MCQ
1/15	UNIT 6 EXAM - FRQ
1/16	FRQ Practice
	Unit 7: Equilibrium
1/20	7.1 Introduction to Equilibrium Lab: Straw Activity - What is Equilibrium?
1/21	7.2 Direction of Reversible Reactions
1/22	7.3 Representations of Equilibrium
1/23	7.4 Writing Equilibrium Expressions QUIZ #14 (7.1 - 7.3)
1/24	7.6 Equilibrium Constant of Multistep Reactions
1/26	7.7 Equilibrium Constant vs. Reaction Quotient
1/27	7.8 Calculating Equilibrium Concentrations
1/28	7.8 Calculating Equilibrium Concentrations Continued
1/29	7.9 Introduction to Le Chatelier's Principle
1/30	7.10 Reaction Quotient and Le Chatelier's Principle QUIZ #15 (7.4 - 7.8)
2/2	Lab: Application of Le Châtelier's Principle
2/3	
2/4	7.11 Introduction to Solubility
2/5	7.12 Common-Ion Effect
2/6	QUIZ #16 (7.9 - 7.12)
2/13	LAB: Equilibrium
2/17	UNIT 7 EXAM REVIEW
2/18	UNIT 7 EXAM - MCQ
2/19	UNIT 7 EXAM - FRQ
2/20	FRQ PRACTICE
	Unit 8: Acids & Bases
2/23	8.1 Introduction to Acids and Bases
2/24	LAB: Acids and Bases Mini-Lab
2/25	8.2 pH and pOH of Strong Acids and Bases
2/26	8.3 Weak Acid and Base Equilibria
2/27	QUIZ #17 (8.1 - 8.2)
3/2	8.4 Acid-Base Reactions and Buffers
3/3	
3/4	AP EXAM PRACTICE TEST (UNITS 1-7)
3/5	8.5 Acid-Base Titrations
3/6	
	SPRING BREAK
3/17	8.6 pH and pK_a

3/18	<u>LAB: How Much Citric Acid is in Sprite?</u>
3/19	8.7 Molecular Structure of Acids and Bases QUIZ #18 (8.3 - 8.6)
3/20	8.7 Molecular Structure of Acids and Bases
3/23	8.8 Properties of Buffers
3/24	8.9 Henderson-Hasselbalch Equation QUIZ #19 (8.7 - 8.8)
3/25	8.10 Buffer Capacity
3/26	8.11 pH and Solubility
3/27	<u>LAB: Creating a Buffer</u>
3/30	UNIT 8 EXAM REVIEW
3/31	UNIT 8 EXAM - MCQ
4/1	UNIT 8 EXAM - FRQ
Unit 9: Applications of Thermodynamics	
4/2	9.1 Introduction to Entropy
4/7	9.2 Absolute Entropy and Entropy Change
4/8	9.3 Gibbs Free Energy
4/9	9.4 Thermodynamic and Kinetic Control
4/10	9.5 Free Energy and Equilibrium QUIZ #20 (9.1 - 9.4)
4/13	9.6 Coupled Reactions
4/14	9.7 Galvanic (Voltaic) and Electrolytic Cells
4/15	9.8 Cell Potential and Free Energy
4/16	9.9 Cell Potential Under Nonstandard Conditions QUIZ #21 (9.5 - 9.8)
4/17	<u>LAB: Creating a Galvanic Cell</u>
4/20	UNIT 9 EXAM REVIEW
4/21	UNIT 9 EXAM - FRQ
4/22	UNIT 9 EXAM - MCQ
Comprehensive Review	
4/23	Review Units 1 and 2
4/24	Review Units 3 and 4
4/27	Review Units 5 and 6
4/28	Review Units 7 and 9
4/29	Review Unit 8
4/30	AP Practice Questions
5/1	AP Practice Questions
5/4	AP Practice Questions
5/5	AP Chem Exam 8am
OPTIONAL Saturday Sessions	
4/11	Full AP Exam MCQ
4/18	MCQ Review, Tips and Tricks
4/25	Full AP Exam FRQ
5/2	FRQ Review, Tips and Tricks