

## Advanced Placement Chemistry: LDHS 2019-2020

**Instructor:** Ms. Grace Little

**Course Webpage:** <https://www.ldisd.net/Domain/2342>

**Email:** glittle@ldisd.net

**Text:** Chemistry (Zumdahl, 9<sup>th</sup> edition)

**A graphing calculator will be useful during the 2<sup>nd</sup> semester; however, it is not required. Non-graphing scientific calculators will be provided.**

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**Course Descriptions**

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.

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**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.

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**How to Contact Ms. Little**

Tutorials:

Monday & Wednesday: 7:45am – 8:15am

Tuesday & Thursday: 3:45pm – 4:15pm

Or by appointment *ahead of time*

Email: Many in-person opportunities for help will be provided; but, due to the way chemistry is “written” (many superscripts and subscripts!) it is very difficult for your instructor to accurately convey topics using email. No chemistry content questions will be answered by email. If you need to email Ms. Little about something else:

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)

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**Attendance and Daily Work**

Excellent attendance is required for success in this course, in order to receive credit a student must attend at least 90% of the days the class is offered. The “Daily Work” (Minor Grade) average is 50% of your total grade and consists of a mixture of quizzes, attendance, homework, and class participation.

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**Homework**

Homework problems from your textbook will also be assigned for you to work at your own pace. While it is expected you complete all the homework problems, only selected problems will be graded for accuracy. Questions from the homework may appear on quizzes and exams. Incomplete or late homework assignments will not be accepted. Homework is always due the next class period after it was assigned.

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**How to Succeed in Chemistry**

**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, in-class activities, etc.). A binder is a great way to keep these many different forms of learning collected and organized.

**Do your homework.** Practice, Practice, Practice.

**Attend Tutorials.** Don't be afraid to ask questions! Proactive responses are better than last minute panic! Bring your questions and be prepared to listen to the questions of other students.

**Be a good class citizen.** Smile at your classmates and introduce yourself to someone you might not know. Ask someone in the class how their day is going. **Turn off and put away all electronic devices while in class.**

**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 textbook* – Don't be afraid to google!

**Attend Falcon Library.** Falcon Library offers extra tutoring on Monday and Thursday from 4-6:30pm.

#### Extra Credit/Exam Corrections

Neither extra credit nor exam corrections will be allowed in AP Chemistry. However, I reserve the right to amend this rule.

#### Tentative Schedule

Unit	Unit Topic	Class Days	Exam Date
1	Atomic Structure and Properties		
	1.1 Moles and Molar Mass 1.2 Mass Spectroscopy of Elements 1.3 Elemental Composition of Pure Substances 1.4 Composition of Mixtures 1.5 Atomic Structure and Electron Configuration 1.6 Photoelectron Spectroscopy 1.7 Periodic Trends 1.8 Valence Electrons and Ionic Compounds	7-8	September 5th or 9th
2	Molecular and Ionic Compound Structure and Properties		
	2.1 Types of Chemical Bonds 2.2 Intramolecular Force and Potential Energy 2.3 Structure of Ionic Solids 2.4 Structure of Metals and Alloys 2.5 Lewis Diagrams 2.6 Resonance and Formal Charge 2.7 VSEPR and Bond Hybridization	6-7	September 25th or 27th
3	Intermolecular Forces and Properties		
	3.1 Intermolecular Forces 3.2 Properties of Solids 3.3 Solids, Liquids, and Gases 3.4 Ideal Gas Law 3.5 Kinetic Molecular Theory 3.6 Deviation from Ideal Gas Law 3.7 Solutions and Mixtures 3.8 Representations of Solutions 3.9 Separations of Solutions and Mixtures Chromatography 3.10 Solubility 3.11 Spectroscopy and the Electromagnetic Spectrum 3.12 Photoelectric Effect 3.13 Beer-Lambert Law	8-9	October 23rd or 25th
4	Chemical Reactions		
	4.1 Introduction for Reactions 4.2 Net Ionic Equations 4.3 Representations of Reactions 4.4 Physical and Chemical Changes 4.5 Stoichiometry 4.6 Introduction to Titration 4.7 Types of Chemical Reactions 4.8 Introduction to Acid-Base Reactions 4.9 Oxidation-Reduction Reactions	7-8	November 12th or 14th
5	Kinetics		
	5.1 Reaction Rates 5.2 Introduction to Rate Law 5.3 Concentration Changes Over Time 5.4 Elementary Reactions 5.5 Collision Model 5.6 Reaction Energy Profile 5.7 Introduction to Reaction Mechanisms 5.8 Reaction Mechanism and Rate Law 5.9 Steady-State Approximation	7-8	December 11th or 14th

	5.10 Multistep Reaction Energy Profile 5.11 Catalysis		
<b>Comprehensive Midterm</b>			
<b>Winter Vacation</b>			
6	Thermodynamics		
	6.1 Endothermic and Exothermic Processes 6.2 Energy Diagrams 6.3 Heat Transfer and Thermal Equilibrium 6.4 Heat Capacity and Calorimetry 6.5 Energy of Phase Changes 6.6 Introduction to Enthalpy of Reaction 6.7 Bond Enthalpies 6.8 Enthalpy of Formation 6.9 Hess's Law	7-8	January 29th or 31st
7	Equilibrium		
	7.1 Introduction to Equilibrium 7.2 Direction of Reversible Reactions 7.3 Reaction Quotient and Equilibrium Constant 7.4 Calculating the Equilibrium Constant 7.5 Magnitude of the Equilibrium Constant 7.6 Properties of the Equilibrium Constant 7.7 Calculating Equilibrium Concentrations 7.8 Representations of Equilibrium 7.9 Introduction to Le Chatlier's Principle 7.10 Reaction Quotient and Le Chatlier's Principle 7.11 Introduction to Solubility 7.12 Common-Ion Effect 7.13 pH and Solubility 7.14 Free Energy of Dissolution	7-8	February 19th or 21st
8	Acids and Bases		
	8.1 Introduction to Acids and Bases 8.2 pH and pOH of Strong Acids and Bases 8.3 Weak Acid and Base Equilibria 8.4 Acid-Base Reactions and Buffers 8.5 Acid-Base Titrations 8.6 Molecular Structure of Acids and Bases 8.7 pH and pKa 8.8 Properties of Buffers 8.9 Henderson-Hasselbalch Equation 8.10 Buffer Capacity	7-8	March or 12th
9	Applications of Thermodynamics		
	9.1 Introduction to Entropy 9.2 Absolute Entropy and Entropy Change 9.3 Gibbs Free Energy 9.4 Thermodynamic and Kinetic Control 9.5 Free Energy and Equilibrium 9.6 Coupled Reactions 9.7 Galvanic (Voltaic) and Electrolytic Cells 9.8 Cell Potential and Free Energy 9.9 Cell Potential Under Nonstandard Conditions 9.10 Electrolysis and Faraday's Law	8-9	April 14th or 16th
1-9	Comprehensive Review	7-8	
<b>AP Chemistry Test Date: May 7th @ 8am</b>			