



Phone: 713-688-1361

Website: www.houstonisd.org/waltrip

AP CHEMISTRY SYLLABUS

Instructor: Mr. Luis F Nino

Room 3103

Conference hour: 5th, 6th period Tel: 713 6881361

e-mail: lnino1@houstonisd.org

COURSE DESCRIPTION AND EXPECTATIONS

Advanced Placement (AP) Chemistry is the *equivalent* to a first-year college chemistry course. We will be using College Board's AP® Classroom and resources to guide our learning. This course is designed to assist students in passing the AP® Chemistry exam. Passing the AP® Chemistry exam may qualify students to skip the first-year college chemistry course and save money on tuition. All students must take the AP® exam on **MON, MAY 1, 2023**. Passing scores on the AP exam are 3, 4, or 5. Students receive this score in July from AP College board.

- The course is structured to incorporate the big ideas and required content outlined in each of the units described in the AP Chemistry Course and Exam Description (CED) The course provides opportunities for students to develop the skills related to:
 - Science Practice 1: Models and Representations
 - Science Practice 2: Question and Method
 - Science Practice 3: Representing Data and Phenomena
 - Science Practice 4: Model Analysis
 - Science Practice 5: Mathematical Routines
 - Science Practice 6: Argumentation
- The course provides students with opportunities to apply their knowledge of AP Chemistry concepts to real-world questions or scenarios (including societal issues or technological innovations) to help them become scientifically literate citizens.
- Students spend a minimum of 25% of instructional time engaged in a wide range of hands-on, inquiry-based laboratory investigations to support learning required content and developing science practices throughout the course. At minimum, 16 labs are performed of which at least 6 are conducted in a guided inquiry format.
- The course provides opportunities for students to record evidence of their scientific investigations in lab reports/notebooks (print or digital format) and present evidence of their scientific investigations through oral, written, and visual presentations.

TEXTBOOKS

Students will have access to textbooks through Canvas and College Board. Textbook is in the Canvas (Zumdahl, 10th edition, 2018) Assignments will be in given on both websites and progress checks will be done regularly on AP® Classroom.

ACADEMIC HONESTY

Prepare to **spend at least 1-1.5 hours daily for chemistry**. (Reading and checking notes, reading the next day materials, practice work, working ahead, correcting assignments, etc.) Before any lecture, read the appropriate sections from the text. Begin working text problems as soon as a unit has begun. For success, students must be able to work problems quickly and correctly. Treat this course as a priority and you will be rewarded. I strongly believe that the best way to learn a concept is to do your own work. Occasionally, we all need help.

*Let's define the parameters concerning the "help" that is available on practice work, and labs:

- from me-- at any time, you can reach me by email and not officially by TEAMS;
- from each other-- IF you only talk "process" ("First I found the mass of lead, then I found....")
- from the internet or other sources when studying; understand how the answer was derived

*Let's define the "help" that is considered cheating:

- copying of answers; plagiarism; distributing answers without permission
- turning in another student's work as your own;
- using notes on a test or quiz without permission; etc.

CLASSROOM and ACADEMIC EXPECTATIONS

1. All HISD and Waltrip High School rules and expectations.
2. Assume the responsibility, maturity, and independent thinking of a college student.
3. Take the AP Chemistry test MON, MAY 1, 2023.
4. Be respectful and responsible. Refusal to make efforts to complete work, excessive absences and tardies result in an academic referral.

GRADING SYSTEM

Grades are based on points earned on tests, quizzes, laboratories/projects, homework/problems sets. Each component is weighted as follows:

Exams/projects- **30%**; Homework/classwork- **30%**; Quiz- **25%**; Lab- **15%**.

Student exam scores **are** curved according to college board preparation. This curve is the square root of the raw score multiplied by 10. All other student scores **are not** curved. The following grading scale will be used:

A = 90%- 100% **B** = 80% - 89% **C** = 75% - 79% **D**= 70% - 74% **F**= 69% & below

Extra Credit

- o You may receive ½ point per eligible question for correcting quiz questions. You must include the original.
- o You may receive ½ point per eligible question for correcting exam questions. You must include the original.
- o Late work is not eligible for extra credit.

- o Other extra credit opportunities as designed with instructor approval. If you are missing any assignments, you are **not** eligible. Points are added to the lowest homework/classwork score.
- o All extra credit is individual.

It is important that students do the best they can the first time they do an assignment, quiz, or exam, etc.

RETAKE POLICY

1. You are permitted a maximum of **2** retakes for exams only.
2. Maximum retake score is 80%, (score of 80 to 100 = 80). This score is not curved past 70%.
3. You may correct any lab for half credit back. All retakes are individual.
4. The highest grade between the original and the retake is counted.
5. Semester Exams are not eligible for retake.

HANDING IN ASSIGNMENTS/ LATE WORK

1. Always turn in your assignments to receive feedback.
2. All assignments are due **ON TIME**. Late assignments receive a maximum score of **70%** and are not permitted for extra credit points or retake/correction points.
3. If you are on campus the day an assignment is due then you are required to turn it in, even if you miss your chemistry class period. It is your responsibility to come to me to submit your work to me. Put the work in my hands. Turn in your work even if you leave early or arrive late. Do not send other people to submit work on your behalf.

MAKE-UP WORK

1. It is the student's responsibility to obtain and make up work missed due to excused absences.
2. Make-up work is due one day after the student returns to school following an absence: If you miss school on Monday but return to school on Tuesday, then your work is due Wednesday. If you are in school Monday but miss Monday's class, your work is still due on Monday; come see me before you leave early.
3. Students are given extensions according to the number of days absent: 2 school days for a 2-day absence, etc. If you are absent from school Monday and Tuesday but return to school on Wednesday, your work is due Friday-- You have Wednesday(day1) and Thursday(day2) as your extended days.
4. **Lab Make-up:** Due to the nature of labs, it is extremely important that you be in class on lab days. Labs involve chemicals and equipment that may be available on lab day only. To make up a missed lab, you will need to collect the data from another student group.

To the Parents/Guardians:

Awareness and involvement in your child's schoolwork is the first step for them to achieve success. I encourage you to read over and discuss the course syllabus and expectancies with him/her so that any questions may be answered promptly. I expect your son/daughter to assume the responsibility, maturity and independent thinking of a college student.

As the parent, I encourage you to monitor his/her progress and attendance during the school year. Some helpful tools include:

- **Grade reports/ New Power Teacher Pro** – Your student should be able to report his/her grade to you at any time with reasonable accuracy and you may view your student's progress using Power Teacher Pro. Please also monitor your student's absences and tardies.
- **HISD CANVAS** is an online learning software used to facilitate learning. The student textbook for this course is online/on the laptop as there are very limited physical textbooks to check out. It is critical that students bring a laptop every day to school in order to complete their work.
- **E-mail, phone communication, conferences.** –The is the best method to contact me is through email at lnino1@houstonisd.org.

Your students should **spend at least 1-1.5 hours each day studying for chemistry.** (Reading and checking notes, Reading the next day materials, practice work, assignments, CANVAS, etc.) Before any classroom topic discussion, read the appropriate sections from the text. Begin working text problems as soon as a unit has begun. Encourage your student to come to class with questions and take advantage of extra credit opportunities.

Our goal, with your help, is for your student to successfully pass this course, perform well on the AP exam, and earn college credit. If we- student, teacher, and parent- can make a commitment to work together, then this will be an obtainable goal. Your questions and comments are always welcomed! Please sign the attached page to acknowledge that you have received this information and are aware of the policies and expectancies of your student's Advanced placement chemistry class.

Thank you,
Mr. L Nino
AP Chemistry Instructor
S. P. Waltrip High School
lnino1@houstonisd.org

Please fill in the following information and provide phone number(s) where I may contact you or leave messages concerning your student.

Student Name: _____

Parent/Guardian Name: _____

Contact Phone Number: _____

Email: _____

I have read and discussed the classroom procedures with my son/daughter, and understand the grading policy, expectations and other information provided on the syllabus.

Student Signature: _____

Parent Signature: _____

Date: _____

AP Chemistry Outline 2021 – 22

	<p>UNIT 1</p> <p>Atomic Structure and Properties</p> <p>~9–10 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>1.1 Moles and Molar Mass</p> <p>1.2 Mass Spectroscopy of Elements</p> <p>1.3 Elemental Composition of Pure Substances</p> <p>1.4 Composition of Mixtures</p> <p>1.5 Atomic Structure and Electron Configuration</p> <p>1.6 Photoelectron Spectroscopy 4</p> <p>1.7 Periodic Trends 4</p> <p>1.8 Valence Electrons and Ionic Compounds</p> <p>Personal Progress Check 1</p> <p>Multiple-choice: ~20 questions</p> <p>Free-response: 2 questions</p> <p>▪ § Short-answer</p>	<p>UNIT 2</p> <p>Molecular and Ionic Compound Structure and Properties</p> <p>~12–13 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>2.1 Types of Chemical Bonds</p> <p>2.2 Intramolecular Force and Potential Energy</p> <p>2.3 Structure of Ionic Solids 4</p> <p>2.4 Structure of Metals and Alloys 4</p> <p>2.5 Lewis Diagrams</p> <p>2.6 Resonance and Formal Charge</p> <p>2.7 VSEPR and Bond Hybridization</p> <p>Personal Progress Check 2</p> <p>Multiple-choice: ~15 questions</p> <p>Free-response: 1 question</p> <p>▪ § Long-answer</p>	<p>UNIT 3</p> <p>Intermolecular Forces and Properties</p> <p>~14–15 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>3.1 Intermolecular Forces 4</p> <p>3.2 Properties of Solids 4</p> <p>3.3 Solids, Liquids, and Gases</p> <p>3.4 Ideal Gas Law</p> <p>3.5 Kinetic Molecular Theory 4</p> <p>3.6 Deviation from Ideal Gas Law</p> <p>3.7 Solutions and Mixtures</p> <p>3.8 Representations of Solutions</p> <p>3.9 Separation of Solutions and Mixtures</p> <p>Chromatography</p> <p>3.10 Solubility 4</p> <p>3.11 Spectroscopy and the Electromagnetic Spectrum 4</p> <p>3.12 Photoelectric Effect</p> <p>3.13 Beer-Lambert Law</p> <p>Personal Progress Check 3</p> <p>Multiple-choice: ~30 questions</p> <p>Free-response: 2 questions</p> <p>▪ § Short-answer</p> <p>▪ § Short-answer</p>
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>UNIT 4</p> <p>Chemical Reactions</p> <p>~14–15 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>4.1 Introduction for Reactions</p> <p>4.2 Net Ionic Equations</p> <p>4.3 Representations of Reactions</p> <p>4.4 Physical and Chemical Changes</p> <p>4.5 Stoichiometry</p> <p>4.6 Introduction to Titration</p> <p>4.7 Types of Chemical Reactions</p> <p>4.8 Introduction to Acid-Base Reactions</p> <p>4.9 Oxidation-Reduction (Redox) Reactions</p> <p>Personal Progress Check 4</p> <p>Multiple-choice: ~20 questions</p> <p>Free-response: 1 question</p> <ul style="list-style-type: none"> ▪ § Long-answer 	<p>UNIT 5</p> <p>Kinetics</p> <p>~13–14 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>5.1 Reaction Rates</p> <p>5.2 Introduction to Rate Law</p> <p>5.3 Concentration Changes Over Time</p> <p>5.4 Elementary Reactions</p> <p>5.5 Collision Model</p> <p>5.6 Reaction Energy Profile</p> <p>5.7 Introduction to Reaction Mechanisms</p> <p>5.8 Reaction Mechanism and Rate Law</p> <p>5.9 Steady-State Approximation</p> <p>5.10 Multistep Reaction Energy Profile</p> <p>5.11 Catalysis</p> <p>Personal Progress Check 5</p> <p>Multiple-choice: ~25 questions</p> <p>Free-response: 2 questions</p> <ul style="list-style-type: none"> ▪ § Short-answer ▪ § Long-answer 	<p>UNIT 6</p> <p>Thermodynamics</p> <p>~10–11 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>6.1 Endothermic and Exothermic Processes</p> <p>6.2 Energy Diagrams</p> <p>6.3 Heat Transfer and Thermal Equilibrium</p> <p>6.4 Heat Capacity and Calorimetry</p> <p>6.5 Energy of Phase Changes</p> <p>6.6 Introduction to Enthalpy of Reaction 4</p> <p>6.7 Bond Enthalpies</p> <p>6.8 Enthalpy of Formation</p> <p>6.9 Hess's Law</p> <p>Personal Progress Check 6</p> <p>Multiple-choice: ~20 questions</p> <p>Free-response: 2 questions</p> <ul style="list-style-type: none"> ▪ § Short-answer ▪ § Short-answer
--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>UNIT 7</p> <p>Equilibrium</p> <p>~14–16 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>7.1 Introduction to Equilibrium</p> <p>7.2 Direction of Reversible Reactions 4</p> <p>7.3 Reaction Quotient and Equilibrium Constant</p> <p>7.4 Calculating the Equilibrium Constant</p> <p>7.5 Magnitude of the Equilibrium Constant</p> <p>7.6 Properties of the Equilibrium Constant</p> <p>7.7 Calculating Equilibrium Concentrations</p> <p>7.8 Representations of Equilibrium</p> <p>7.9 Introduction to Le Châtelier’s Principle</p> <p>7.10 Reaction Quotient and Le Châtelier’s Principle</p> <p>7.11 Introduction to Solubility Equilibria</p> <p>7.12 Common-Ion Effect</p> <p>7.13 pH and Solubility</p> <p>7.14 Free Energy of Dissolution</p> <p>Personal Progress Check 7</p> <p>Multiple-choice: ~30 questions</p> <p>Free-response: 2 questions</p> <ul style="list-style-type: none"> ▪ § Short-answer ▪ § Long-answer 	<p>UNIT 8</p> <p>Acids and Bases</p> <p>~14–15 Class</p> <p>Periods 11–15% AP Exam</p> <p>Weighting</p> <p>8.1 Introduction to Acids and Bases</p> <p>8.2 pH and pOH of Strong Acids and Bases</p> <p>8.3 Weak Acid and Base Equilibria</p> <p>8.4 Acid-Base Reactions and Buffers</p> <p>8.5 Acid-Base Titrations</p> <p>8.6 Molecular Structure of Acids and Bases</p> <p>8.7 pH and pK_a</p> <p>8.8 Properties of Buffers</p> <p>8.9 Henderson-Hasselbalch Equation</p> <p>8.10 Buffer Capacity</p> <p>Personal Progress Check 8</p> <p>Multiple-choice: ~30 questions</p> <p>Free-response: 1 question</p> <ul style="list-style-type: none"> ▪ § Long-answer 	<p>UNIT 9</p> <p>Applications of Thermodynamics</p> <p>~10–13 Class</p> <p>Periods 7–9% AP Exam</p> <p>Weighting</p> <p>9.1 Introduction to Entropy</p> <p>9.2 Absolute Entropy and Entropy Change</p> <p>9.3 Gibbs Free Energy and Thermodynamic Favorability</p> <p>9.4 Thermodynamic and Kinetic Control</p> <p>9.5 Free Energy and Equilibrium</p> <p>9.6 Coupled Reactions 4</p> <p>9.7 Galvanic (Voltaic) and Electrolytic Cells</p> <p>9.8 Cell Potential and Free Energy</p> <p>9.9 Cell Potential Under Nonstandard Conditions</p> <p>9.10 Electrolysis and Faraday’s Law</p> <p>Personal Progress Check 9</p> <p>Multiple-choice: ~30 questions</p> <p>Free-response: 2 questions</p> <ul style="list-style-type: none"> ▪ § Short-answer ▪ § Long-answer
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------