

## AP Chemistry Syllabus 2020-2021

Parents and Students: Mountain Range High School is implementing Standards Referenced Grading for all classes including AP Chemistry. This process of grading places the emphasis for students on mastering the standards associated with each subject.

AP Chemistry: This year long course studies matter: its composition, structure, properties, and the changes it undergoes. The AP Chemistry curriculum is framed around six big ideas which are accessed through the use of seven science practices. The six big ideas of chemistry and practices are used throughout the year to understand the individual topics studied in each unit. Their will 4 Grade Reporting Criteria (GRC's) used to determine the final grade which will be listed below the six big ideas. The unit outline will give the specific topic covered, the Big Ideas behind that topic and a general idea of the time spent on that topic.

### Six Big Ideas:

Big Idea 1	Chemical elements are the fundamental building materials of matter, and all matter can be understood in terms of arrangement of atoms. These atoms retain their identity in chemical reactions
Big Idea 2	Chemical and physical properties of materials can be explained by the structure and the arrangement of atoms, ions, or molecules and the forces between them
Big Idea 3	Changes in matter involve the rearrangement and/or reorganization of atoms and/or the transfer of electrons.
Big Idea 4	Rates of chemical reactions are determined by details of the molecular collisions
Big Idea 5	The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter
Big Idea 6	Any bond or intermolecular attraction that can be formed can be broken. These two processes are in a dynamic competition, sensitive to initial conditions and external perturbations

### The GRCs

GRC #1 Disciplinary Core Ideas	This is the specific information students need to know and utilize to be successful in AP Chemistry
GRC #2 Science Practices	These are the processes that scientists use to gain new knowledge, including lab work and research
GRC #3 Communication	This is the process of interpreting the chemistry information given to you into personal understanding and the process of communicating your understanding of chemistry.

GRC #4 Practice	Homework and other means of preparation are essential for success in rigorous college level coursework
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### Unit Outline

Unit of Study	Grade Level Expectations/Content Standards	Time	Assessment Date
Unit 1 Matter Measurement Atomic Structure/ Theory	Development of atomic models, electronic structure of atoms, relationship to periodic table, ions. <b>Big Idea 1</b>	3 weeks	September 15
Unit 2 Chemical Bonding and Molecular Shapes	Types of bonding, properties of molecules with each type of bonding, intro to molecular shapes and intermolecular attractions. <b>Big Ideas 1 and 2</b>	3 weeks	October 8
Unit 3 Chemical Reactions	Interpreting a chemical reaction, balancing chemical reactions, types of reaction, predicting products, calculating masses of product formed etc. <b>Big Idea 3</b>	5 Weeks	November 14
Unit 4 States of Matter and Solutions	The study of the forces and factors that determine the state of matter of any substance. Nature of solutions, types of solutions, solubility, concentration dilution, colligative properties <b>Big Idea 2</b>	4 Weeks	December 12
Unit 5 Kinetics and Equilibrium	Rates of chemical reactions and the factors affecting those rates The dynamic competition of forward and reverse reactions and the factors affecting that competition <b>Big Ideas 4 and 6</b>	4 Weeks	January 30
Unit 6 Acids and Bases	The study of substances that have acid and base properties and the effect of those properties on other substances. <b>Big Idea 6</b>	4 Weeks	February 27
Unit 7 Thermodynamics	The effect of energy on chemical reactions and the study of the energy absorbed or released in chemical reactions. <b>Big Idea 5</b>	4 Weeks	April 3
Unit 8 Electrochemistry	The study of electron transfer and the energy associated with that electron transfer as well as the factors that affect these electron transfers. <b>Big Ideas 3 and 5</b>	2 Weeks	April 17
Unit 9 AP Test Review	Preparing for the AP exam through sample questions and self-grading using AP generated rubrics for free response questions	2 Weeks	May 1

### Grading:

Letter grades are based on demonstration of proficiency in the four GRC areas and the GRC's are weighted as follows.

Disciplinary Core Ideas	60%
Science Practices	15%
Communication	15%
Practice	10%

Students will be allowed to retake assessments provided they have demonstrated additional learning since the initial assessment was given and the retake is done within 2 weeks of the initial assessment.

Each assessment and graded practice will be evaluated using the following marks. The final letter grade for credit will be based on the assessment marks applied to the course grade scale.

4 ---- Advanced Understanding of the Standard

3 ---- Meets the Standard

2 ----- Approaches the Standard

1 ----- Does not Meet the Standard

M ---- Missing

<b>Course Grade Scale</b>	
<b>A</b>	89.5 - 100
<b>B</b>	79.5 – 89.4
<b>C</b>	69.5 – 79.4
<b>D</b>	59.5 – 69.4
<b>F</b>	0 – 59.4