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Description automatically generated**Chemistry Advanced Parent Guide**

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| Students in Chemistry will study a variety of topics that include characteristics of matter, use of the Periodic Table, development of atomic theory, chemical bonding, chemical stoichiometry, gas laws, solution chemistry, acid-base chemistry, thermochemistry, and nuclear chemistry. This course is a laboratory-oriented course that emphasizes the skills of gathering and analyzing both qualitative (observational) and quantitative (numerical) data. A conceptual approach will be coupled with mathematical skills necessary to solve fundamental chemistry problems. Emphasis is placed on independent labs skills and critical thinking skills. Students will investigate how chemistry is an integral part of our daily lives. Texas Essential Knowledge and Skills for Chemistry [§112.43. Science, Chemistry, Adopted 2021](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=19&pt=2&ch=112&rl=43) | |
| 1st 6 Weeks:Course Introduction/Safety/Interactive Science Notebooks Matter, Energy & Change: Introduction to Energy  Modeling Energy  Conservation of Matter  Heat Transfer and Thermal Equilibrium | 4th 6 Weeks: Chemical Reactions: Modeling Chemical Reactions; Predicting Outcomes of Reactions; Reactions in Aqueous Solution  Stoichiometry:  Quantifying Reactants and Products; Stoichiometric Calculations |
| 2nd 6 Weeks: Atomic Structure:  Modeling Atoms  Atom Emission Spectra & the Bohr Model  Modern Atomic Theory  Electrons in Atoms  The Periodic Table: The Periodic Table & Atomic Structure  Periodic Trends  Chemical Bonding: Ionic Bonds; Metallic Bonds | 5th 6 Weeks:Stoichiometric Calculations; Limiting Reagent and Percent Yield The Behavior of Gases: Properties of Gases; The Gas Laws; Ideal Gases  Gases – Mixtures and Movements  Thermochemistry: Energy in Chemical Bonds  Enthalpies of Formation and Reaction  The Progress of Chemical Reactions:  Activation Energy  Reversable Reactions and Equilibrium  Thermodynamics and Favorability |
| 3rd 6 Weeks: Covalent Bonds  Intermolecular Attractions  Names and Formulas of Compounds  Physical Properties of Substances:  States of Matter  Modeling Phase Changes  Comparing Ionic and Molecular Compounds  Comparing Metals and Nonmetals  Water and Aqueous Systems  Properties of Solutions  Chemical Qualities: The Mole Concept and Relationships | 6th 6 Weeks: Acid-Base Chemistry: Defining Acids and Bases  Acid-Base Reactions  Buffer Systems  Oxidation-Reduction Reactions:  Oxidation vs. Reduction  Modeling Redox Reactions  Applications of Redox Reactions  Nuclear Processes: Radioactivity and Half-Life  Applications of Nuclear Phenomena  Fission and Fusion |

**Questions?** Please contact your course science teacher.