**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%24ext.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 NotebooksMatter, Energy & Change: Introduction to EnergyModeling EnergyConservation of MatterHeat Transfer and Thermal Equilibrium | 4th 6 Weeks:Chemical Reactions: Modeling Chemical Reactions; Predicting Outcomes of Reactions; Reactions in Aqueous SolutionStoichiometry:Quantifying Reactants and Products; Stoichiometric Calculations |
| 2nd 6 Weeks:Atomic Structure:Modeling AtomsAtom Emission Spectra & the Bohr ModelModern Atomic TheoryElectrons in AtomsThe Periodic Table: The Periodic Table & Atomic StructurePeriodic TrendsChemical Bonding: Ionic Bonds; Metallic Bonds | 5th 6 Weeks:Stoichiometric Calculations; Limiting Reagent and Percent YieldThe Behavior of Gases: Properties of Gases; The Gas Laws; Ideal GasesGases – Mixtures and MovementsThermochemistry: Energy in Chemical BondsEnthalpies of Formation and ReactionThe Progress of Chemical Reactions:Activation EnergyReversable Reactions and EquilibriumThermodynamics and Favorability |
| 3rd 6 Weeks:Covalent BondsIntermolecular AttractionsNames and Formulas of CompoundsPhysical Properties of Substances:States of MatterModeling Phase ChangesComparing Ionic and Molecular CompoundsComparing Metals and NonmetalsWater and Aqueous SystemsProperties of SolutionsChemical Qualities: The Mole Concept and Relationships | 6th 6 Weeks:Acid-Base Chemistry: Defining Acids and BasesAcid-Base ReactionsBuffer SystemsOxidation-Reduction Reactions:Oxidation vs. ReductionModeling Redox ReactionsApplications of Redox ReactionsNuclear Processes: Radioactivity and Half-LifeApplications of Nuclear PhenomenaFission and Fusion |

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