

Science Curriculum
Morris County USD #417
Grade 12 – Chemistry

**Understand: “understand” does not mandate “belief.” While students may be required to understand some concepts that researchers use to conduct research and solve practical problems, they may accept or reject the scientific concepts presented. This applies particularly where students’ and/or parents’ beliefs may be at odds with current scientific theories or concepts. (KS Science Standards, February 14, 2001, p. 76)*

Indicator	Description	Date(s)			
12KS1.1.1	Develop understanding/curiosity of the natural world through experience.				
12KS1.1.2	Develop questions/identify concepts to guide scientific investigations.				
12KS1.1.3	Design and conduct scientific investigations.				
12KS1.1.4	Use technology/mathematics to improve investigations and communications.				
12KS1.1.5	Formulate/revise scientific explanations and models using logic and evidence.				
12KS1.1.6	Recognize/analyze alternative explanations.				
12KS1.1.7	Communicate/defend a scientific argument.				
12KS2A.1.1	Atoms are the fundamental organizational unit of matter.				
12KS2A.1.2	Atoms have smaller components that have measurable mass and charge.				
12KS2A.1.3	The nucleus of an atom is composed of protons and neutrons. They determine the mass of the atom.				
12KS2A.1.4	The dense nucleus of an atom is in the center of an electron cloud, and the electron cloud determines the size of the atom.				
12KS2A.1.5	Isotopes are atoms with the same number of protons but different numbers of neutrons.				
12KS2A.1.6	Radioactive isotopes spontaneously decompose and are a source of radioactivity.				
12KS2A.2.1	Elements are substances that contain only one kind of atom.				
12KS2A.2.2	Elements are arranged according to increasing atomic number on the periodic table.				
12KS2A.2.3	The periodic table organizes elements according to similar physical/chemical properties by groups, periods, and categories.				
12KS2A.2.4	There are discrete energy levels for electrons in an atom.				
12KS2A.2.5	Valence electrons determine the chemistry of the atom.				
12KS2A.2.6	Chemical bonds result when electrons are transferred or shared between atoms.				
12KS2A.2.7	Compounds result from chemical bonds between ions or atoms.				
12KS2A.2.8	The nature of interactions among ions or between molecular compounds determines their physical properties.				
12KS2A.2.9	Kinetic models are used to explain the physical properties of gases.				
12KS2A.2.10	Carbon atoms can bond to each other in chains, rings, and branching networks to form different molecular structures.				

**Science Curriculum
Morris County USD #417
Grade 12 – Chemistry**

**Understand: "understand" does not mandate "belief." While students may be required to understand some concepts that researchers use to conduct research and solve practical problems, they may accept or reject the scientific concepts presented. This applies particularly where students' and/or parents' beliefs may be at odds with current scientific theories or concepts. (KS Science Standards, February 14, 2001, p. 76)*

12KS2A.3.1	Two or more of the following: physical property change, effervescence, mass change, precipitation, light emission, and heat exchange may identify chemical reactions.				
12KS2A.3.2	Explore chemical reactions that absorb energy from or release energy to the surroundings.				
12KS2A.3.3	Distinguish different types of chemical reactions such as synthesis, decomposition, combustion, displacement, acid/base, and oxidation/reductions.				
12KS2A.3.4	Demonstrate the Law of Conservation of Mass through stoichiometric relationships.				
12KS2A.3.5	Appreciate the significance of chemical reactions in nature and those used everyday in society.				
12KS2A.3.6	Recognize entropy as a driving force behind chemical reactions.				
12KS2A.3.7	Assess the interrelationships between the rate of chemical reactions and variables such as temperature, concentration, catalysts, and reaction type.				