

Warren County Schools



CHEMISTRY PACING GUIDE 2017 – 2018 (Semester/Year)

Philosophical approach to the process of teaching and learning science in the Warren County School District (WCS).

In WCS there is an emphasis on both traditional and innovative teaching methodologies of science curriculum. Whereas traditional laboratory experiences provide opportunities to demonstrate how science is constant, historic, probabilistic, and replicable; intuitive-practical solutions to scientific problem solving are encouraged. Even though there are no fixed steps that all scientists follow, scientific investigations usually involve collections of relevant evidence, the use of logical reasoning, the application of imagination to devise hypotheses, and explanations to make sense of collected evidence. Student engagement in scientific investigation provides background for understanding the nature of scientific inquiry. In addition, the science process skills necessary for inquiry are acquired through active experience. The process skills support development of reasoning and problem-solving ability and are the core of scientific methodologies.

# of Instruction Weeks	Topic/Standard	Essential Questions/Learning Intensions	Benchmark Testing Window Dates	UNIT Assessments Dates
1 Day 8/29	First Day of Semester <i>Syllabus/ class policies/ Lab Safety</i>			

UNIT 1 – The Science of Chemistry

Yr. (1) Sem. (1)	Introduction to the Methods of Chemistry- Scientific Method, Experimental Design, Significant Figures, and conversions.	Why does science often have standardized processes? How do smaller parts combine to build larger substances in science?	TBD by Site Administration
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UNIT-2: The Atom

Yr.(2-4) Sem.(2-3)	Basic Atomic Structure- Atoms, Ions, Isotopes, Electron location and Bohr Model <ul style="list-style-type: none"> • Based on location, charge, and mass; differentiate between protons, neutrons and electrons, and Scientific notation, NC Essential Standard: Chm.1.1- Analyze the structure of atoms and ions.	Describe the relationship between an isotope and the mass of an atom?	TBD by Site Administration
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Common Assessment and Student Performance From Units (1-2) Data Review Date TBD

UNIT-3:The Periodic Table

<p>Yr.(5 – 7) Sem.(4-5)</p>	<p>Electrons & Periodic Behavior-</p> <ul style="list-style-type: none"> • Arrangement of electrons in atoms The periodic Table, Electron Configuration, Periodic trends and Physical properties <p>NC Essential Standard: Chm.1.3- Understand the physical and chemical properties of atoms based on their position in the periodic table.</p>	<p>What is the relationship between the number of valence electrons, the oxidation number, and the group number for a main-group element? Distinguish between metals, nonmetals, and metalloids by their location on the periodic table.</p>		<p>TBD by Site Administration</p>
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UNIT-4: Bonding

<p>Yr.(8 – 10) Sem.(6-7)</p>	<p>Chemical Bonding-</p> <ul style="list-style-type: none"> • Ionic bonds, covalent bonds, metallic bonds, bond types and bond forces. <p>NC Essential Standard: Chm.1.2- Understand the bonding that occurs in simple compounds in terms of bond type, strength, and properties.</p>	<p>How would you describe the difference between ionic and covalent bonding?</p>	<p>N</p>	<p>TBD by Site Administration</p>
<p>Yr.(11 – 13) Sem. (8-9)</p>	<p>Molecular Structure & Naming-</p> <ul style="list-style-type: none"> • Chemical formula, IUPAC naming, and VSPER Theory <p>NC Essential Standard: Chm.1.2- Understand the bonding that occurs in simple compounds in terms of bond type, strength, and properties.</p>	<p>What is VSPER Theory and how does it relate to the shape of molecules? How do you use chemical nomenclature rules to name binary and ternary ionic compounds?</p>		

Common Assessment and Student Performance From Units (3-5) Data Review Date TBD

UNIT-5: Conservation of Matter (Reactions)

Yr.(14 – 16) Sem.(10)	Reactions: <ul style="list-style-type: none">Energy content, evidence of chemical change, write & balance equations, predict products, percent composition and calculate empirical & molecular formulas. NC Essential Standard: Chm.2.2- Analyze chemical reactions in terms of quantities, product formation and energy.	How would you calculate the molar mass of an element and a compound? How do you find the percentage composition of each component in a compound?		TBD by Site Administration
Yr.(16 – 19) Sem. (11)	Stoichiometry: <ul style="list-style-type: none">Calculate moles, particles, mass, or volume. Limiting Reactant, and actual/theoretical yield. NC Essential Standard: Chm.2.2 Analyze chemical reactions in terms of quantities, product formation and energy.	How do you convert particles to moles, mass to moles, and volume of a gas to moles?		

UNIT-6: Physical Properties

Yr.(20 – 22) Sem.(12-13)	Gases: <ul style="list-style-type: none">Phase diagrams, specific heat, relationships between pressure, temperature and volume of gas, gas laws, and molecular composition of gas. NC Essential Standard: Chm.2.1- Understand the relationship among pressure, temperature, volume and phase.	How do solids, liquids, and gases differ from one another? What heat changes occur when a substance changes from a solid to a liquid to a gas?		TBD by Site Administration
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Common Assessment and Student Performance From Units (5-6) Data Review Date-TBD

UNIT 7: Solids, Liquids and Solutions

Yr.(23 – 25) Sem. (13)	Solutions: <ul style="list-style-type: none"> Properties of solutions & solution concentrations, solubility diagrams, and solution process. NC Essential Standard: Chm.3.2- Understand solutions and the solution process.	How to determine the molarity of a solution?		TBD by Site Administration
Yr.(26 – 28) Sem.(14)	Acid and Bases: <ul style="list-style-type: none"> Properties, Titrations, and Molarity. NC Essential Standard: Chm.3.2- Understand solutions and the solution process.	How are acids and bases identified according to their physical and chemical properties? How to calculate pH, pOH, and concentration ranges and describe the role of an indicator? How does color and color change relate to acids and bases?		
Yr.(31 – 29) Sem.(15)	Equilibrium- <ul style="list-style-type: none"> Factors that affect rate and conditions at equilibrium/ LeChatelier NC Essential Standard: Chm.3.1- Understand the factors affecting rate of reaction and chemical equilibrium.	Are chemical equations reversible and why is that important? How might you represent that an expression has reached equilibrium?		

UNIT-8: Nuclear Chemistry

Yr.(32 – 34) Sem. (16)	<p>Nuclear Chemistry: Half-life, fission, fusion, alpha, beta, and gamma</p> <p>NC Essential Standard: Chm.1.1- Analyze the structure of atoms and ions</p>	<ol style="list-style-type: none"> 1. Distinguish between alpha and beta particles and gamma radiation. 2. How are fusion reactions different from fission 		TBD by Site Administration
Review /NC Final Exam				
Yr. (34-35) Sem. (17)	<p>The NCFE: based upon the three NC chemistry learning goals:</p> <ol style="list-style-type: none"> 1- <i>Matter: Properties and Change</i> 2- <i>Energy: Conservation and Transfer</i> 3- <i>Interaction of Energy and Matter</i> 			