

Alignment of OAE Chemistry Assessment Framework with Ohio-specified Standards

This alignment study identifies the national and/or Ohio educational standards that are addressed in whole or in part by each competency of the assessment framework. An indication of alignment does not necessarily imply complete congruence of the content of an OAE test competency with the relevant standard. The information in this document is subject to change if revisions are made to the assessment framework. Any changes will fully supersede the information contained in this document.

Competencies		Ohio Educational Preparation Standards	Ohio Educator Standards	Ohio Student Standards	
Physical Sciences: Chemistry (7-12)		NSTA 2012 Standards for Science Teacher Preparation: Secondary Science Content Analysis Form	Ohio Standards for the Teaching Profession	Ohio Revised Science Standards and Model Curriculum: K-8 and High School	CCSS - Reading Standards for Literacy in Science and Technical Subjects
<u>Nature of Science</u>					
0001	Understand principles and procedures of scientific inquiry.	Unifying Concepts: A.1-3; Chem: A.12; B.26	2	Gr. 6-12: 2-4; 7-8	Gr. 6-12: 2-4; 7-8
0002	Understand the history and nature of science.	Unifying Concepts: A.1-A.2; A.4 Chem: B.25 Phys: B.20 Bio: B.19 Earth/Space Sci: B.20	2	Science Inquiry and Application	
0003	Understand the relationships between science, technology, engineering, mathematics, and society.	Unifying Concepts: A.5; Chem: A.13; B.24; B.27	2	Science Inquiry and Application	Gr. 6-12: 1-2; 4

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<u>Matter and Atomic Structure</u>					
0004	Understand the properties of matter.	Chem: A.1; A.3; A.12	2	Chem: Atomic Structure	
0005	Understand atomic theory and the periodic table.	Chem: A.1; A.3; B.14	2	Chem: Periodic Table	
0006	Understand the kinetic molecular theory, the nature of phase changes, and the gas laws.	Chem: A.3-A.4; B.23	2	Chem: Gas Laws; Phases of Matter	
<u>Energy and Chemical Bonding</u>					
0007	Understand the principles of thermodynamics and calorimetry.	Chem: A.4; A.12; B.16; B.23	2	Chem: Chemical Reactions	
0008	Understand energy relationships in chemical bonding, chemical reactions, and physical processes.	Chem: A.2; A.4; B.16; B.18; B.23	2	Chem: Intramolecular Chemical Bonding; Chemical Reactions	

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0009	Understand the nomenclature and structure of inorganic and organic compounds.	Chem: A.1; A.9; A.10; B.19	2	Chem: Representing Compounds	CCSS - Reading Standards for Literacy in Science and Technical Subjects 6-12: 4
0010	Understand chemical bonding and intermolecular forces and their effect on the properties of substances.	Chem: A.2-A.3; B.21	2	Chem: Intramolecular Chemical Bonding	
<u>Chemical Reactions</u>					
0011	Understand the nature of chemical reactions.	Chem: A.2; A.4; A.6; A.8; B.16	2	Chem: Chemical Reactions	
0012	Understand the principles of chemical equilibrium.	Chem: A.4; A.6; B.16; B.23	2	Chem: Chemical Reactions	
0013	Understand acid-base chemistry.	Chem: A.8; A.12; B.21	2	Chem: Chemical Reactions	
0014	Understand oxidation-reduction reactions and electrochemistry.	Chem: A.5; A.8; A.12; B.27	2	Chem: Chemical Reactions	
<u>Stoichiometry and Solutions</u>					
0015	Understand the mole concept.	Chem: A.6	2	Chem: Quantifying Matter; Stoichiometry	

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0016	Understand stoichiometry.	Chem: A.6	2	Chem: Quantifying Matter; Stoichiometry	CCSS - Reading Standards for Literacy in Science and Technical Subjects 6-12: 4
0017	Understand the properties of solutions and colloidal suspensions.	Chem: A.8; B.18; B.20	2	Chem: Intramolecular Chemical Bonding	