

INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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|------|--------------------------------|-------|
| I. | Generic Evaluation Criteria | _____ |
| II. | Instructional Content Analysis | _____ |
| III. | Specific Science Criteria | _____ |

PUBLISHER:	Bedford, Freeman and Worth
SUBJECT:	Science
COURSE:	Chemistry Technical Conceptual
TITLE:	Chemistry in the Community, 4th Edition
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PART I -GENERIC EVALUATION CRITERIA GROUP V – 2006 TO 2012

CHEMISTRY TECHNICAL CONCEPTUAL – GRADE 11-12

R-E-S-P-O-N-S-E			CRITERIA	NOTES
Yes	No	N/A		
✓ _____	_____ _____	_____ _____	I. INTER-ETHNIC The instructional material meets the requirements of inter-ethnic: concepts, content and illustrations, as set by West Virginia Board of Education Policy (Adopted December 1970).	
✓ _____	_____ _____	_____ _____	II. EQUAL OPPORTUNITY The instructional material meets the requirements of equal opportunity: concept, content, illustration, heritage, roles contributions, experiences and achievements of males and females in American and other cultures, as set by West Virginia Board of Education Policy (Adopted May 1975).	

**PART II – CHEMISTRY TECHNICAL CONCEPTUAL – GRADE 11-12
INSTRUCTIONAL CONTENT ANALYSIS**

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	(IMR Committee) Responses							
	<i>I=In-depth 80%</i>	<i>A=Adequate 80%</i>	<i>M=Minimal 60%</i>	<i>N=Nonexistent Less than 60%</i>	I	A	M	N

The instructional materials program presents information and opportunities in a manner that enables the student to:

1. **History and the Nature of Science**

_____	a. formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results (CTC.1.1)	_____	✓	_____	_____
_____	b. communicate that science has practical and theoretical limitations (CTC.1.2)	_____	✓	_____	_____
_____	c. recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent (CTC.1.3)	_____	✓	_____	_____
_____	d. explore science as a blend of creativity, logic and mathematics (CTC.1.4)	_____	✓	_____	_____
_____	e. trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions (CTC.1.5)	_____	✓	_____	_____
_____	f. integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them (CTC.1.6)	_____	_____	✓	_____

2. **Science as Inquiry Objectives**

_____	a. develop the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity) (CTC.2.1)	✓	_____	_____	_____
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	b. discuss ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review) (CTC.2.2)					✓		
	c. apply scientific approaches to seek solutions for personal and societal issues (CTC.2.3)				✓			
	d. properly and safety manipulate equipment, materials, chemicals, organisms and models (CTC.2.4)				✓			
	e. explore a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations) (CTC.2.5)					✓		
	f. use computers and other electronic technologies in an investigative context (CTC.2.6)							✓
	g. engage in scientific problem solving and critical thinking (CTC.2.7)				✓			
	h. design, conduct, evaluate and revise experiments (CTC.2.8)				✓			
3.	<u>Unifying Themes Objectives</u>							
	a. analyze systems to understand the natural and designed world (CTC.3.1)					✓		
	b. apply evidence from models to make predictions about interactions and changes in systems (CTC.3.2)						✓	
4.	<u>Scientific Design and Application Objectives</u>							
	a. summarize technological advances in the chemistry (CTC.5.1)					✓		
	b. analyze the interdependence of science and technology (CTC.5.2)				✓			
	c. relate how scientific skills are used to design solutions that address personal and societal needs (CTC.5.3)					✓		
	d. describe the scientific concepts underlying technological innovations (CTC.5.4)					✓		

PART III - SPECIFIC CRITERIA
CHEMISTRY TECHNICAL CONCEPTUAL - GRADE 11-12

Chemistry Technical Conceptual is the study of matter, its composition and its changes. This course is an alternative to a traditional college preparatory course. It emphasizes real life applications of chemical principles. Mathematical based problem solving is de-emphasized. Emphasis is placed on the important role chemistry plays in a student's personal life, career opportunities, environment and society. Students will engage in active inquiries, investigations and hand-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research laboratory skills. Safety instruction is integrated into all activities.

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The instructional materials program presents information and opportunities in a manner that enables the student to:

1.	<u>Properties of Matter</u>				
	a. review the classification of matter and the properties of metals and nonmetals (CTC.4.1)	_____	✓	_____	_____
	b. identify sources and uses of elements (CTC.4.2)	_____	_____	✓	_____
	c. use the kinetic molecular theory to explain physical states of matter (CTC.4.3)	_____	✓	_____	_____
	d. perform calculations using the gas laws (CTC.4. 4)	_____	✓	_____	_____
	e. apply the principle of distillation to the separation of liquids (CTC.4.5)	✓	_____	_____	_____
2.	<u>Atomic Structure</u>				
	a. review the parts of the atom (CTC.4.6)	_____	✓	_____	_____
	b. review the relationship of an element's group and period position with its properties (CTC.4.7)	_____	✓	_____	_____
	c. compare atomic and ionic electronic structures (CTC.4.8)	_____	✓	_____	_____
3.	<u>Bonding</u>				
	a. review formula writing and ionic and covalent bonding (CTC.4.9)	_____	_____	✓	_____

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		b. recognize the impact of water's unusual physical properties (CTC.4.10)			✓			
		c. predict solute solubility based on molecular polarity (CTC.4.11)				✓		
4.		<u>Stoichiometry</u>						
		a. review balancing equations (CTC.4.12)					✓	
		b. use dimensional analysis to perform unit conversions and to verify experimental calculations (CTC.4.13)					✓	
		c. apply the mole concept relating to chemical formulas and measuring chemical quantities (CTC.4.14, 15)				✓		
		d. determine the percent composition by mass of the elements in a compound (CTC. 4.16)				✓		
		e. illustrate the concept of a limiting reagent (CTC. 4.18)				✓		
5.		<u>Solution Chemistry</u>						
		a. review solution properties: solubility, conductivity, density, pH, colligative (CTC. 4.19)				✓		
		b. perform solutions concentration calculations (CTC. 4.21)				✓		
		c. compare and contrast the properties: strong and weak acids, strong and weak bases (CTC. 4.22)				✓		
		d. perform an acid-base neutralization reaction (CTC. 4.23)					✓	
6.		<u>Electrochemistry</u>						
		a. construct electrolytic cells to observe the reduction of ions into free metals and write the half-reactions that occur (CTC. 4.24)			✓			
		b. predict reactions of metals with aqueous solutions using the Metal Activity Series (CTC. 4.25)			✓			

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7.	<u>Reaction Dynamics</u>							
	a. review temperature and heat (CTC. 4.26)					✓		
	b. measure the flow of energy into or out of chemical reactions (CTC. 4.27)					✓		
	c. predict the effect of temperature and catalysts on reaction rates (CTC.4.28)					✓		
	d. apply LeChatelier's Principle in determining equilibrium (CTC.4.29)					✓		
8.	<u>Carbon and Petroleum</u>							
	a. draw and construct models for the first ten alkanes (CTC.4.30)				✓			
	b. relate the properties of organic compounds to their functional groups (CTC.4.31)						✓	
	c. demonstrate the formation of polymers from smaller molecules (CTC. 4.32)					✓		
	d. compare and contrast the use of petroleum as either a source of energy or as a fundamental ingredient of synthetic materials (CTC. 4.33)					✓		
9.	<u>Nuclear Chemistry</u>							
	a. review nuclear fusion and fission, isotopes and half-lives (CTC.4.34)					✓		
	b. compare the penetrating energies of nuclear radiation (CTC.4.35)					✓		
	c. balance simple nuclear equations(CTC.4.36)					✓		
	d. explain practical applications of nuclear technology (CTC. 4.37)				✓			