INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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

PUBLISHER:	**McDougal Littell**
SUBJECT:	**Science**
COURSE:	**Advanced Environmental Earth Science**
TITLE:	**Earth Science**
COPYRIGHT DATE:	**2005**
SE ISBN:	**0-61-849938-5**
TE ISBN:	**0-61-849939-3**

PART I -GENERIC EVALUATION CRITERIA
GROUP V – 2006 TO 2012

ADVANCED ENVIRONMENTAL EARTH SCIENCE – 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 - ADVANCED ENVIRONMENTAL EARTH SCIENCE – GRADE 11-12
INSTRUCTIONAL CONTENT ANALYSIS

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

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

1. **<u>History and the Nature of Science</u>**

a. formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results (AES.1.1)		✓		
b. communicate that science has practical and theoretical limitations (AES.1.2)		✓		
c. recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent (AES.1.3)		✓		
d. explore science as a blend of creativity, logic and mathematics (AES.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 (AES.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 (AES.1.6)		✓		

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
	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) (AES.2.1)				✓			
	b. discuss ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review) (AES.2.2)				✓			
	c. apply scientific approaches to seek solutions for personal and societal issues (AES.2.3)					✓		
	d. properly and safety manipulate equipment, materials, chemicals, organisms and models (AES.2.4)				✓			
	e. explore a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations) (AES.2.5)				✓			
	f. use computers and other electronic technologies in an investigative context (AES.2.6)					✓		
	g. engage in scientific problem solving and critical thinking (AES.2.7)				✓			
	h. design, conduct, evaluate and revise experiments (AES.2.8)				✓			

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
	3.	**Unifying Themes Objectives**						
		a. relate earth and environmental systems to the natural and designed world (AES.3.1)			✓			
		b. use models to make predictions about interactions and changes in systems (AES.3.2)			✓			
		c. use graphs and equations relating changes in systems to rate, scale, patterns, trends and cycles (AES.3.3)				✓		
		d. cite examples of different characteristics, properties or relationships within a system that might change as its dimensions change (AES.3.4)				✓		
	4.	**Scientific Design and Application Objectives**						
		a. summarize technological advances in the biological sciences (AES.5.1)			N/A			
		b. analyze the interdependence of science and technology (AES.5.2)			✓			
		c. relate how scientific skills and technological tools are used to design solutions that address personal and societal needs (AES.5.3)				✓		
		d. describe the scientific concepts underlying technological innovations (AES.5.4)				✓		
		e. integrate appropriate technology solutions to promote scientific inquiry (AES.5.5)				✓		

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
	5. **Science in Personal and Social Perspectives**							
	a. provide opportunities to investigate and discuss the impact that politics may have on the environmental decisions (AES.6.1)					✓		
	b. provide opportunities investigate the effects of natural phenomena on the environment (AES.6.2)					✓		
	c. promotes the research of current environmental issues (AES.6.3)					✓		
	d. describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge (AES.6.4)					✓		
	e. describe occupational opportunities in science and technology (AES.6.5)					✓		
	f. provides decision-making activities to resolve science-technology-society issues (AES.6.6)					✓		

PART III – SPECIFIC CRITERIA – GRADE 11-12
ADVANCED ENVIROMENTAL EARTH SCIENCE

Advanced Environmental Earth Science (Eleven/Twelve) builds on the fundamentals of geology, oceanography, meteorology and astronomy developed in CATS 7-10 in a rigorous and integrated manner with the traditional disciplines of biology, chemistry and physics where appropriate. As stewards of the earth, an emphasis on environment should be included within the traditional earth science disciplines. Ecology, economics, politics and social considerations all combine to help students develop an understanding of how humans effect and are effected by their environment. Students will engage in active inquiries, investigations, and hands-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.

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
	1. **Advanced Environmental Earth Science**							
	a. demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences (SC.S.4)					✓		
	2. **Dynamic Earth**							
	a. identify and describe the structure, origin and evolution of the lithosphere, hydrosphere, atmosphere and biosphere (AES.4.2)				✓			
	3. **Geology**							
	a. list, identify and sequence eras, epochs and periods in relation to earth history and geologic development (AES.4.4)				✓			
	b. utilize fossil evidence to estimate the relative and absolute ages of rock layers (AES.4.5)				✓			
	c. find the absolute age of materials using existing radioisotopic data including half-life (AES.4.6)					✓		
	d. identify the type and composition of various minerals (AES.4.7)				✓			
	e. investigate and explain the processes of the rock cycle (AES.4.8)				✓			

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
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		f. explain the influence between pressure and temperature in the formation and reformation of rocks (AES.4.9)				✓		
		g. identify and describe agents and processes of degradation (AES.4.10) • weathering by gravity • wind • water • ice			✓			
		h. identify and describe tectonic forces (AES.4.11)			✓			
		i. explain how tectonic forces change the surface of the earth with respect to (AES.4.12) • volcanoes • earthquakes • fault lines • hot spots • mountain building			✓			
	4.	**<u>Oceanography</u>**						
		a. compare and contrast lateral and vertical motions in the ocean (AES.4.15): • density currents • surface currents • wave motion • influence on climate and the structure of landmasses			✓			
		b. investigate the evolution of the ocean floor (AES.4.16)			✓			
		c. investigate the stratification of the ocean including colligative properties and biological zonation (AES.4.17)				✓		

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
	5. **Meteorology**							
	a. investigate and explain heat transfer in the atmosphere and its relationship to meteorological processes (AES.4.18)					✓		
	b. compare and contrast meteorological processes related to air masses, weather systems and forecasting by constructing and interpreting weather maps (AES.4.20)				✓			
	c. examine global changes over time (AES.4.21) • climatic trends • global warming • ozone depletion					✓		
	6. **Astronomy**							
	a. research theories concerning origins of the universe (AES.4.22)				✓			
	b. apply Newton's Law of Universal Gravitation to the motion of celestial objects (AES.4.23)					✓		
	c. investigate the solar system (AES.4.234) • origin theories • comparing and contrasting the planets • planetary motions • other celestial bodies				✓			
	d. investigate stars and their evolution (AES.4.25)				✓			
	e. explain the relationships between location, navigation and time (AES.4.26)					✓		
	f. compare ancient and modern methods and tools used to study astronomy (AES.4.27)					✓		
	g. investigate the electromagnetic spectrum as related to observable phenomena in the universe (AES.4.28)				✓			

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	7. **Environment**							
	a. describe the relationship between earth processes and natural disasters (AES.4.29)				✓			
	b. investigate the impact of natural disasters on human populations (AES.4.29)				✓			
	c. explore the relationships between human consumption of natural resources and the stewardship responsibility for reclamations including disposal of hazardous and non-hazardous waste (AES.4.30)					✓		
	d. investigate and describe in detail the physical and chemical properties of water (AES.4.31)					✓		
	e. explain common problems related to the conservation, use, supply and the quality of water (AES.4.32)				✓			
	f. explore the relationship between the extraction and use of natural resources and the impact on the environment (AES.4.33)					✓		
	g. research alternative energy sources (AES.4.34) • solar • geothermal • wind • nuclear • clean coal technologies					✓		
	h. research and explain how the political system influences environmental decisions (AES.4.36)					✓		
	i. investigate which federal and state agencies have responsibility for environmental monitoring and actions (AES.4.37)						✓	
	j. develop decision-making skills with respect to addressing environmental problems (AES.4.38)					✓		

INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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

PUBLISHER:	**McDougal Littell**
SUBJECT:	**Science**
COURSE:	**Advanced Chemistry**
TITLE:	**Introductory Chemistry: A Foundation**
COPYRIGHT DATE:	**2004**
SE ISBN:	**0-61-830499-1**
TE ISBN:	**0-61-830507-6**

PART I -GENERIC EVALUATION CRITERIA
GROUP V – 2006 TO 2012

ADVANCED CHEMISTRY – 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 – ADVANCED CHEMISTRY – GRADE 11-12
INSTRUCTIONAL CONTENT ANALYSIS

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**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 (AC.1.1)		✓			
	b. communicate that science has practical and theoretical limitations (AC.1.2)	✓				
	c. recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent (AC.1.3)	✓				
	d. explore science as a blend of creativity, logic and mathematics (AC.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 (AC.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 (AC.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) (AC.2.1)		✓			

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
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		b. discuss ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review) (AC.2.2)				✓		
		c. apply scientific approaches to seek solutions for personal and societal issues (AC.2.3)				✓		
		d. properly and safety manipulate equipment, materials, chemicals, organisms and models (AC.2.4)			✓			
		e. explore a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations) (AC.2.5)					✓	
		f. use computers and other electronic technologies in an investigative context (AC.2.6)				✓		
		g. engage in scientific problem solving and critical thinking (AC.2.7)			✓			
		h. design, conduct, evaluate and revise experiments (AC.2.8)				✓		
	3.	**Unifying Themes Objectives**						
		a. analyze systems to understand the natural and designed world (AC.3.1)				✓		
		b. apply evidence from models to make predictions about interactions and changes in systems (AC.3.2)				✓		
		c. measure changes in systems using graph and equations relating these to rate, scale, patterns, trends and cycles (AC.3.3)				✓		
		d. cite examples of different characteristics, properties or relationships within a system that might change as its dimensions are increased or decreased (AC.3.4)				✓		
	4.	**Scientific Design and Application Objectives**						
		a. summarize technological advances in the chemistry (AC.5.1)				✓		

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
		b. analyze the interdependence of science and technology (AC.5.2)				✓		
		c. relate how scientific skills are used to design solutions that address personal and societal needs (AC.5.3)				✓		
		d. describe the scientific concepts underlying technological innovations (AC.5.4)				✓		
		e. integrate appropriate technology solutions to promote scientific inquiry (AC.5.5)				✓		
	5.	**Science in Personal and Social Perspectives**						
		a. promotes the research of current environmental issues as they relate to chemistry (AC.6.1)				✓		
		b. describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge (AC.6.2)				✓		
		c. describe occupational opportunities in science and technology (AC.6.5)					✓	
		d. provides decision-making activities to resolve science-technology-society issues (AC.6.6)					✓	

SPECIFIC CRITERIA
PART III – ADVANCED CHEMISTRY - GRADE 11-12

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire a broader, in-depth study of the content found in the science filed of chemistry. This course is designed to build upon and extend the Chemistry concepts, skills and knowledge from the CATS 7-10 program. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills.

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

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

1. **Properties of Matter**
   a. review (AC.4.1)
      - the classification of matter using the periodic table
      - kinetic molecular theory to explain physical states of matter
      - physical and chemical properties
      - physical and chemical changes

   ✓

2. **Atomic Structure**
   a. review Bohr model of the atom and calculations of subatomic particles (AC.4.2)

   ✓

      - protons
      - neutrons
      - electrons

   b. research and evaluate the contributions of Dalton, Planck, Bohr, Einstein, de Broglie, Heisenberg and Schrodinger to the evolution of the atomic theory (AC.4.3)

   ✓

   c. identify four types of electron clouds (s, p, d, f) and describe the quantum number (n, l, m, s) for electrons (AC.4.4)

   ✓

   d. write electron configurations and associate electron configuration of elements with element location on periodic table (AC.4.5)

   ✓

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		e. write electron dot structures for representative elements (AC.4.6)					✓	
	3.	**Bonding**						
		a. predict the formulas of ionic compounds and molecular compounds (AC.4.7)			✓			
		b. analyze the periodic table to predict trends in (AC.4.8): • atomic size • ionic size • electronegativity • ionization energy • electron affinity				✓		
		c. using the periodic table, predict the type of bonding that occurs between atoms and differentiate among properties of ionic, covalent and metallic bonds (AC.4.9)				✓		
		d. construct models to explain the structure and geometry of organic and inorganic molecules and the lattice structures of crystals (AC.4.10)				✓		
		e. recognize simple organic functional groups and name simple organic compounds (AC.4.11)			✓			
	4.	**Stoichiometry**						
		a. predict the products and write balanced equations for the general types of chemical reactions (AC.4.12)			✓			
		b. use dimensional analysis to perform unit conversions and to verify experimental calculations (AC.4.13)			✓			
		c. use the Avogadro constant to (AC.4.14): • define the mole • calculate molecular mass • calculate molar mass • calculate molar volume			✓			
		d. perform calculations using the combined and ideal gas laws (AC.4.15)			✓			

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		e. use molar mass to calculate (AC.4.16) • the molarity of solutions • percentage composition • empirical formulas • formulas of hydrates				✓		
		f. experimentally determine the empirical formulas of hydrates (AC.4.17)						✓
		g. perform stoichiometric calculations including (AC.4.18): • mass-mass • mass-volume • volume-volume • determining theoretical yield • identifying the limiting reactant			✓			
	5.	**Equilibrium**						
		a. experimentally determine the factors that influence the rate of reactions (AC.4.19)					✓	
		b. apply LeCatelier's principle to explain the effect of changes in concentration, pressure, volume and temperature on an equilibrium system (AC.4.20)			✓			
	6.	**Solution Chemistry**						
		a. review colligative properties (AC.4.21)				✓		
		b. name and define acids and bases using Arrhenius, Bronsted-Lowry and Lewis definitions (AC.4.22)				✓		
		c. predict the products upon adding water to both acidic and basic anhydrides (AC.4.23)				✓		
		d. write and balance net ionic equations (AC.4.24)			✓			
		e. solve problems using the solubility products constants (AC.4.25)				✓		
		f. calculate the pH and/or pOH for various solutions and relate to the pH scale (AC.4.26)			✓			

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		g. conduct titrations and perform calculations for both acid-base and oxidation-reduction reactions (AC.4.27)				✓		
	7.	**<u>Electrochemistry</u>**						
		a. define oxidation and reduction in terms of electron transfer within reaction (AC.4.29)			✓			
		b. using electrolytic cells to (AC.4.29) • construct electrolytic cells • write and balance the half-cell reactions and calculate cell voltage				✓		
	8.	**<u>Reaction Dynamics</u>**						
		a. calculate the enthalpy change in reactions using the heats of formation (AC.4.30)					✓	
		b. evaluate the factors driving chemical reactions including enthalpy and entropy and their interrelationship (AC.4.31)					✓	
	9.	**<u>Nuclear Chemistry</u>**						
		a. write balanced nuclear equations and make predications using half-life values (AC.4.32)			✓			
		b. investigate the (AC.4.33, 4.35): • biological effects of radiation • units used to measure radiation • applications of nuclear technology				✓		
		c. compare and contrast fusion and fission reactions (AC.4.34)				✓		

INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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

PUBLISHER:	**McDougal Littell**
SUBJECT:	**Science**
COURSE:	**Chemistry Technical Conceptual**
TITLE:	**World of Chemistry**
COPYRIGHT DATE:	**2006**
SE ISBN:	**0-61-856275-3**
TE ISBN:	**0-61-857059-4**

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*							
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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)	✓				

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

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	*(IMR Committee) Responses*							
	I=In-depth 80%	*A=Adequate 80%*	*M=Minimal 60%*	*N=Nonexistent Less than 60%*	**I**	**A**	**M**	**N**
		e. integrate appropriate technology solutions to promote scientific inquiry (CTC.5.5)				✓		
	5.	**Science in Personal and Social Perspectives**						
		a. promotes the research of current environmental issues as they relate to chemistry (CTC.6.1)				✓		
		b. describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge (CTC.6.2)				✓		
		c. describe occupational opportunities in science and technology (CTC.6.5)					✓	
		d. provides decision-making activities to resolve science-technology-society issues (CTC.6.6)					✓	

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.	**Properties of Matter**				
		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.	**Atomic Structure**				
		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.	**Bonding**				
		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.	**Stoichiometry**						
		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.	**Solution Chemistry**						
		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.	**Electrochemistry**						
		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.	**Reaction Dynamics**						
		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.	**Carbon and Petroleum**						
		a. draw and construct models for the first ten alkanes (CTC.4.30)			✓			
		b. relate the properties of organize 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.	**Nuclear Chemistry**						
		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)			✓			