

INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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

PUBLISHER:	Thomson Learning Brooks Cole
SUBJECT:	Science
COURSE:	Advanced Environmental Earth Science
TITLE:	Earth Science and the Enviornment
COPYRIGHT DATE:	2005
SE ISBN:	0-53-439313-6
TE ISBN:	0-53-439318-7

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		
✓ _____	_____ _____	_____ _____	<p>I. INTER-ETHNIC</p> <p>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).</p>	
✓ _____	_____ _____	_____ _____	<p>II. EQUAL OPPORTUNITY</p> <p>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).</p>	

**PART II - ADVANCED ENVIRONMENTAL EARTH SCIENCE – 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 (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)	—	✓	—	—

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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)	_____	_____	_____	_____	_____	✓	_____

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3.	<u>Unifying Themes Objectives</u>							
	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.	<u>Scientific Design and Application Objectives</u>							
	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)				✓			

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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.

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1. <u>Advanced Environmental Earth Science</u>								
a. demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences (SC.S.4)						✓		
2. <u>Dynamic Earth</u>								
a. identify and describe the structure, origin and evolution of the lithosphere, hydrosphere, atmosphere and biosphere (AES.4.2)						✓		
3. <u>Geology</u>								
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)						✓		

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5.	<u>Meteorology</u>							
	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.	<u>Astronomy</u>							
	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. <u>Environment</u>								
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: Thomson Learning Brooks Cole
SUBJECT: Science
COURSE: Advanced Biology
TITLE: Biology: Concepts and Applications 6E (with CD-Rom)
COPYRIGHT DATE: 2006
SE ISBN: 0-49-501296-3
TE ISBN: 0-53-446232-4

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

ADVANCED BIOLOGY – 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 BIOLOGY – GRADE 11-12
Instructional Content Analysis**

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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 (AB.1.1)		✓			
	b. communicate that science has practical and theoretical limitations (AB.1.2)		✓			
	c. recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent (AB.1.3)		✓			
	d. explore science as a blend of creativity, logic and mathematics (AB.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 (AB.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 (AB.1.6)	✓				

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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) (AB.2.1)	_____	✓	_____	_____	_____	_____	_____
_____	b. discuss ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review) (AB.2.2)	_____	_____	✓	_____	_____	_____	_____
_____	c. apply scientific approaches to seek solutions for personal and societal issues (AB.2.3)	_____	✓	_____	_____	_____	_____	_____
_____	d. properly and safety manipulate equipment, materials, chemicals, organisms and models (AB.2.4)	_____	_____	_____	_____	_____	_____	✓
_____	e. explore a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations) (AB.2.5)	_____	_____	✓	_____	_____	_____	_____
_____	f. use computers and other electronic technologies in an investigative context (AB.2.6)	_____	_____	✓	_____	_____	_____	_____
_____	g. engage in scientific problem solving and critical thinking (AB.2.7)	✓	_____	_____	_____	_____	_____	_____
_____	h. design, conduct, evaluate and revise experiments (AB.2.8)	_____	_____	_____	_____	_____	✓	_____

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3.	<u>Unifying Themes Objectives</u>							
	a. relate biological or technical systems to the natural and designed world (AB.3.1)					✓		
	b. use models to make predictions about interactions and changes in systems (AB.3.2)					✓		
	c. use graphs and equations relating changes in systems to rate, scale, patterns, trends and cycles (AB.3.3)					✓		
	d. cite examples of different characteristics, properties or relationships within a system that might change as its dimensions change (AB.3.4)				✓			
4.	<u>Scientific Design and Application Objectives</u>							
	a. summarize technological advances in the biological sciences (AB.5.1)					✓		
	b. analyze the interdependence of science and technology (AB.5.2)					✓		
	c. relate how scientific skills and technological tools are used to design solutions that address personal and societal needs (AB.5.3)					✓		
	d. describe the scientific concepts underlying technological innovations (AB.5.4)					✓		
	e. integrate appropriate technology solutions to promote scientific inquiry (AB.5.5)					✓		

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5. **Science in Personal and Social Perspectives**

_____	a. promotes the research of current environmental issues (AB.6.1)	_____	_____	_____	_____	_____	_____	_____
_____	b. describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge (AB.6.2)	_____	_____	_____	_____	_____	_____	_____
_____	c. describe occupational opportunities in science and technology (AB.6.5)	_____	_____	_____	_____	_____	_____	_____
_____	d. provides decision-making activities to resolve science-technology-society issues (AB.6.6)	_____	_____	_____	_____	_____	_____	_____

**PART III - SPECIFIC CRITERIA
ADVANCED BIOLOGY – 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 many biological fields of endeavor. This course is designed to build upon and extend the Biology 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.

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1. <u>Science in Personal and Social Perspectives</u>								
_____ a. investigate and discuss the impact that humans may have on the quality of the biosphere (AB.6.1)					✓			
_____ b. investigate the effects of natural phenomena on the environment (AB.6.2)						✓		
_____ c. promotes research of current environmental issues (AB.6.3)						✓		
_____ d. describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge (AB.6.4)						✓		
_____ e. describe occupational opportunities in science and technology (AB.6.5)							✓	
_____ f. make decisions to resolve science-technology-society issues (AB.6.6)					✓			
2. <u>Chemical Foundations</u>								
_____ a. review foundational chemical concepts and investigate the molecules of life and their function in the living systems (AB.4.1, 4.2)					✓			

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3.	<u>Cell Function and Genetics</u>							
	a. identify the structure, functions, and interactions of eukaryotic cell organelles and their products and research the diversity/uniqueness of cell types (AB.4.3 & 4.5)				✓			
	b. analyze the chemistry and structure of the cell membrane as it relates to import and export of molecules necessary for life (AB.4.4)				✓			
	c. explore photosynthesis and cellular respiration (AB.4.6)				✓			
	d. describe mitotic and meiotic cell cycles as well as prokaryotic cell cycles (AB.4.8, 4.9)				✓			
	e. investigate DNA, gene expression, regulation and mutations and their effects on the diversity of life (AB.4.10, 4.11, 4.17, 4.18 & 4.20)					✓		
	f. provide for the student evaluation of the advantages of asexual and sexual reproduction (AB.4.12)					✓		
	g. explore the principles of genetics including: Mendel's laws, incomplete dominance, gene interaction, codominance, multi-alleles, crossing over, genetic recombination; influences of environment, development, sex and age (AB.4.13, 4.14)				✓			
	h. describe DNA replication and protein synthesis (AB.4.15, 4.16)				✓			
	i. introduce DNA technologies and the social issues they raise (AB.4.19)				✓			
4.	<u>Evolution</u>							
	a. explain natural selection, speciation and evolution including historical and current ideas (AB.4.21, 4.23)				✓			
	b. investigate causes and effects of animal behavior (AB.4.22)				✓			

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5. <u>Classification of Organisms</u>								
a. compare traditional and modern taxonomy and systematics (AB.4.24, 4.25)							✓	
6. <u>Environment and Ecosystems</u>								
a. explore the various systems of the human organism and their interactions (AB.4.26)					✓			
b. investigate responses of organisms to internal and environmental stimuli (AB.4.7, 4.27)						✓		
c. investigate ecology including: energy flow, limiting factors, biotic and abiotic environment, extinction and adaptation (AB.4.28, 4.31)					✓			

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

PUBLISHER:	Thomson Learning Brooks Cole
SUBJECT:	Science
COURSE:	Advanced Chemistry
TITLE:	Chemistry: Principles and Reactions
COPYRIGHT DATE:	2006
SE ISBN:	0-49-501140-1
TE ISBN:	0-49501441-9

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		
✓	_____	_____	<p>I. INTER-ETHNIC</p> <p>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).</p>	
✓	_____	_____	<p>II. EQUAL OPPORTUNITY</p> <p>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).</p>	

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

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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 (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)			✓	
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_____						✓		
_____						✓		
_____							✓	
_____						✓		
5. _____								
_____						✓		
_____						✓		
_____								✓
_____							✓	

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 field 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.

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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 (AC.4.1)					
		<ul style="list-style-type: none"> • 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.	<u>Atomic Structure</u>					
		a. review Bohr model of the atom and calculations of subatomic particles (AC.4.2)	✓				
		<ul style="list-style-type: none"> • 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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_____	3.	e. write electron dot structures for representative elements (AC.4.6)			✓	_____	_____	_____
_____		<u>Bonding</u>						
_____		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.	<u>Stoichiometry</u>						
_____		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)			_____	_____	✓	_____

INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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

PUBLISHER:	Thomson Learning Brooks Cole
SUBJECT:	Science
COURSE:	Physics Technical Conceptual
TITLE:	Physics: A World View, 5th
COPYRIGHT DATE:	2004
SE ISBN:	0-53-440824-9
TE ISBN:	0-53-440828-1

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

PHYSICS 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 - PHYSICS TECHNICAL CONCEPTUAL - GRADE 11-12
Instructional Content Analysis**

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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 (PTC.1.1)	_____	_____	_____	_____
_____		b. communicate that science has practical and theoretical limitations (PTC.1.2)	_____	_____	_____	_____
_____		c. recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent (PTC.1.3)	_____	_____	_____	_____
_____		d. explore science as a blend of creativity, logic and mathematics (PTC.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 (PTC.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 (PTC.1.6)	_____	_____	_____	_____
_____	2.	<u>Science as Inquiry Objectives</u>				
_____		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) (PTC.2.1)	_____	_____	_____	_____

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_____							✓	
_____							✓	
_____							✓	
_____								✓
_____							✓	
_____						✓		
_____						✓		

3. _____								
_____							✓	
_____							✓	
_____							✓	
_____								✓

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4.	<u>Scientific Design and Application Objectives</u>							
	a. summarize technological advances in the biological sciences (PTC.5.1)						✓	
	b. analyze the interdependence of science and technology (PTC.5.2)						✓	
	c. relate how scientific skills and technological tools are used to design solutions that address personal and societal needs (PTC.5.3)					✓		
	d. describe the scientific concepts underlying technological innovations (PTC.5.4)					✓		
	e. integrate appropriate technology solutions to promote scientific inquiry (PTC.5.5)					✓		
5.	<u>Science in Personal and Social Perspectives</u>							
	a. describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge (PTC.6.4)						✓	
	b. describe occupational opportunities in science and technology (PTC.6.5)						✓	
	c. make decisions to resolve science-technology-society issues (PTC.6.6)						✓	

**PART III – SPECIFIC CRITERIA
Physics Technical Conceptual**

Physics-Conceptual is an alternative to the traditional mathematical approach to physics. Emphasis will be on the concepts which underlie the natural laws of the universe. Mathematics will be de-emphasized. Laboratory work will require traditional physics measurements to be made. Students in Physics-Technical or Physics-Conceptual 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.

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1. <u>Mechanics</u>								
_____ a. qualitatively and quantitatively analyze mechanical systems (PTC.4.1.6)						✓		
_____ b. calculate displacement, velocity and acceleration (PTC.4.2)						✓		
_____ c. draw free body diagrams to illustrate the forces acting on objects (PTC.4.3)						✓		
_____ d. apply graphical and algebraic solutions to vector problems (PTC.4.4)						✓		
_____ e. recognize how the conservation of energy applies to (PTC.4.5):								
_____ • Gravitational systems								
_____ • Elastic systems								
_____ • Simple harmonic motion						✓		
_____ f. construct models involving mechanical systems that illustrate the utilization of technology (PTC.4.7)							✓	
2. <u>Fluids</u>								
_____ a. qualitatively and quantitatively analyze fluid systems (PTC.4.8)						✓		
_____ b. identify and apply the properties of solids, liquids and gases to explain their behavior at different pressures and temperatures (PTC.4.9)						✓		

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5.	<u>Electricity and Magnetism</u>							
	a. qualitatively and quantitatively analyze electrical systems (PTC.4.22)					✓		
	b. investigate properties of electricity and magnetism (PTC.4.23)							
	<ul style="list-style-type: none"> • nature of electrical and magnetic fields • properties of electrical charge • conductors and insulators 					✓		
	c. investigate and analyze electrical circuits by (PTC.4.24):							
	<ul style="list-style-type: none"> • drawing and constructing electrical circuits • applying Ohm's law 					✓		
	d. construct models involving the use of electricity that illustrate applications of technology (PTC.4.25)							✓
6.	<u>Modern Physics</u>							
	a. recognize and distinguish between Einstein's General and Special Theories of Relativity (PTC.4.26)					✓		
	b. recognize the products of nuclear decay and write decay chain equations (PTC.4.27)					✓		