

INSTRUCTIONAL MATERIALS ADOPTION

Score Sheet

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

PUBLISHER: Kendall/Hunt Publishing Company
SUBJECT: Science
COURSE: Advanced Biology
TITLE: BSCS Biology: A Human Approach, 3/e
COPYRIGHT DATE: 2006
SE ISBN: 0-7575-1250-X
TE ISBN: 0-7575-1251-8

**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**

(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 (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. <u>Science in Personal and Social Perspectives</u>								
_____ 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)					✓		

INSTRUCTIONAL MATERIALS ADOPTION

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| II. | Instructional Content Analysis | _____ |
| III. | Specific Science Criteria | _____ |

PUBLISHER:	Kendall/Hunt Publishing Company
SUBJECT:	Science
COURSE:	Advanced Environmental Earth Science
TITLE:	Global Science: Energy, Resources, Environment, 6/e
COPYRIGHT DATE:	2006
SE ISBN:	0-7575-0504-X
TE ISBN:	0-7575-0505-8, 0-7575-0936-3

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		
✓ _____	_____ _____	_____ _____	<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**

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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 (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. **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)						✓	