

BIOLOGY I — PACING GUIDE & MAP

2015-16

BSCS BIOLOGY: A Human Approach Unit, Chapter, 5E's, Lessons	Pacing Guide Text's "E" Days, Teacher Driven Lessons	OASS-Biology HS-LS:	PASS	Ideal % of Test Items
Unit 0 ENGAGE: BEING A SCIENTIST	10	SEP 1-8 Can Be Found Integrated throughout ALL Units	PS1.0 - PS5.0 Can Be Found Integrated throughout ALL Units	100%
Engage: Cooperating Like a Scientist	1	SEP1 – SEP 8 HS-LS-1: From Molecules to Organisms 1-2: Levels of Organization	PS 1.0 - PS 5.0 C5.0-MATTER/ENERGY/ ORGANIZATION in LIVING SYSTEMS 5.1 Complexity and Organization Used for Survival	100% 7%
Explore: Communicating Like a Scientist	1			
Explain: Thinking Like a Scientist Thinks	1			
Elaborate: Recording Data in your Science Notebook	1			
Evaluate: You and the Science of Biology	1			
Rituals & Routines	1-5			
Lab & Safety Procedures				
Setting Up Scientific Notebook				
Unit 1 EVOLUTION: Change in Living Systems	37.0-39.0	HS-LS: 4-1, 4-2, 4-3, 4-4, 4-5	C3.0	21-27%
Chapter 1: The Human Animal	12.5-13.5	HS-LS-4: Biological Unity & Diversity 4-1: Common Ancestry & Diversity	C3.0: BIOLOGICAL DIVERSITY 3.1 Variations among Organisms	7-9%
Engage: How Different Are We?	1			
Explore #1: Primates Exploring Primates	3			
Explore #2: A Cold, Hard Look at Culture	2			
Explain: Explaining Humankind	2			
Elaborate: How Similar are We?	2			
Evaluate: What Does it Mean to Be Human?	2			
Other Lessons & Assessments	0.5-1			
Chapter 2: Evolution—Change Across Time	12.5-13.5	HS-LS-4: Biological Unity & Diversity 4-1: Common Ancestry & Diversity 4-2: DNA Evidence 4-3: Factors of Natural Selection 4-4: Types of Natural Selection 4-5: Environmental Factors that Effect Natural Selection	C3.0: BIOLOGICAL DIVERSITY 3.1 Variations among Organisms 3.2 Natural Selection and Biological Adaptations 3.3 Behavior Patterns Can Be Used to Ensure Reproductive Success	3.1 7-9% 3.2 7-9% 3.3 7%
Engage: Lucy	1			
Explore: Exploring Change	4			
Explain: Explaining Adaptation	1.5			
Elaborate #1: Evidence for Evolution	2			
Elaborate #2: Modeling Earth's History	2			
Elaborate #3: Just a Theory?	1			
Evaluate: Evolution in Action	1			
Other Lessons & Assessments	0.5-1			

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Unit 1	EVOLUTION: Change in Living Systems	37.0-39.0	HS-LS: 1-2 HS-LS: 4-1, 4-2, 4-3, 4-4, 4-5	C3.0	21-27%
Chapter 3: Products of Evolution—Unity & Diversity		12.0-13.0	HS-LS-1: From Molecules to Organisms	C3.0: BIOLOGICAL DIVERSITY 3.1 Variations among Organisms 3.2 Natural Selection and Biological Adaptations 3.3 Behavior Patterns Can Be Used to Ensure Reproductive Success	3.1 7-9% 3.2 7-9% 3.3 7%
Engage:	How Many Kinds of Zebras?	1	1-2: Levels of Organization		
Explore:	Using Unity to Explore Diversity	2	HS-LS-4: Biological Unity & Diversity		
Explain#1:	Evolutionary Trees—the Pattern of Evolution	2.5	4-1: Common Ancestry & Diversity		
Explain #2:	Descent with Modification	2	4-2: DNA Evidence		
Elaborate #1:	Evidence for Common Ancestry	2	4-3: Factors of Natural Selection		
Elaborate #2:	Using Unity to Organize Diversity	1.5	4-4: Types of Natural Selection		
Evaluate:	First Encounter with the Critter	1	4-5: Environmental Factors that Effect Natural Selection		
Other Lessons & Assessments		0.5-1			
Unit 2	HOMEOSTASIS: Maintaining Dynamic Equilibrium in Living Systems	8.0-9.0	HS-LS: 1-3	C1.0	14-16%
Chapter 4: The Internal Environment of Organisms		8.0-9.0	HS-LS-1: From Molecules to Organisms 1-3: Organism's Response (Internal & External)	C1.0-The CELL 1.1 Cell Structures and Functions <i>1.1a. cell membrane functions</i> <i>1.1b. differentiate between hypo-, hyper-, and isotonic</i> 1.3 Specialized Cells <i>This unit does not cover 1.1c or 1.2. Provide your own supplemental material.</i>	7-9% 7%
Engage:	Can You Stand the Heat?	1			
Explore:	Cells in Action	2.5			
Explain:	A Cell Model	2.5			
Explain/Elaborate:	Regulating the Internal Environment	1.5			
Evaluate:	Can You Stand the Heat—Again?	0.5			
Other Lessons & Assessments		0.5-1			
Unit 3	ENERGY, MATTER, & ORGANIZATION: Relationships in Living Systems	22.0-24.0	HS-LS: 1-5, 1-6, 1-7 HS-LS: 2-3, 2-4, 2-5	C4.1 C5.1	7-9% 7%
Chapter 8: The Cellular Basis of Activity		10.5-11.5	HS-LS-1: Molecules to Organisms 1-5: Photosynthesis 1-6: Hydrocarbon Backbones 1-7: Cellular Respiration	C4.0- INTERDPEPENDENCE OF ORGANISMS 4.1 Organisms Both Cooperate and Compete	7 – 9%
Engage:	Releasing Energy	0.5			
Explore/Explain:	Energy in Matter	2			
Explain #2:	Keep a Body Running!	3			
Explain/Elaborate:	Using Light Energy to Build Matter	2			
Elaborate #2:	Building Living Systems	2			
Evaluate:	Tracing Matter & Energy	1			
Other Lessons & Assessments		0.5-1			

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Unit 3 ENERGY, MATTER, & ORGANIZATION: Relationships in Living Systems	22.0-24.0	HS-LS: 1-5, 1-6, 1-7 HS-LS: 2-3, 2-4, 2-5	C4.1 C5.1	7-9% 7%
Chapter 9: The Cycling of Matter & the Flow of Energy in Ecosystems	9.5-11.5	HS-LS-2: Ecosystems 2-3: Sources of Energy 2-4: Cycles of Matter 2-5: Carbon Cycle	C5.0-MATTER, ENERGY, & ORGANIZATION in LIVING SYSTEMS 5.1 Complexity and Organization Used for Survival	7%
Engage/Explore: A Matter of Trash	1			
Explore #2: Matter Goes Round and Round	3 - 4			
Explain: Spinning the Web of Life	1			
Elaborate: Generating Some Heat	2			
Evaluate: Energy, Matter, & Disaster	1.5			
Other Lessons & Assessments	0.5-2			
Unit 4 CONTINUITY: Reproduction and Inheritance in Living Systems	24.0-26.0	HS-LS: 1-1 HS-LS: 3-1, 3-2, 3-3	C2.0	14-17%
Chapter 11: Gene Action	11.0-12.0	HS-LS-1: From Molecules to Organisms 1-1: Transcription & Translation HS-LS-3: Heredity, Inheritance, & Variation of Traits 3-1: DNA & Coding 3-2: Genetic Variations 3-3: Math & Punnett Squares	C2.0-THE MOLECULAR BASIS OF HEREDITY 2.1 DNA Structure & Function in Heredity 2.2 Sorting and Recombination of Genes	7 - 9% 7 - 8%
Engage: Decoding the Message	1			
Explore: The Stuff of Life	1			
Explore#2 / Explain: Modeling DNA	3			
Explain #2: Expression of Genetic Information	2			
Elaborate: Genetic Technology	2			
Evaluate: Effects of Mutations	2			
Other Lessons & Assessments	0.5-1			
Chapter 12: Continuity of Information through Inheritance	13.0-14.0	HS-LS-1: From Molecules to Organisms 1-1: Transcription & Translation HS-LS-3: Heredity, Inheritance, & Variation of Traits 3-1: DNA & Coding 3-2: Genetic Variations 3-3: Math & Punnett Squares	C2.0-THE MOLECULAR BASIS OF HEREDITY 2.1 DNA Structure & Function in Heredity 2.2 Sorting and Recombination of Genes	7 - 9% 7 - 8%
Engage: Gifts from Your Parents	0.5			
Explore: Inheritance—What's the Chance?	1			
Explain #1: A Cellular View of Inheritance	3			
Explain #2: Patterns of Inheritance	3			
Elaborate #1: Predicting Inheritance by Using Pedigrees	2			
Elaborate #2: The Genetic Basis for Human Variation	1.5			
Evaluate: Human Genetic Disorders	2			
Other Lessons & Assessments	0.5-1			

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Unit 5 DEVELOPMENT: Growth & Differentiation in Living Systems	8.0-9.0	HS-LS: 1-4	C1.0	21-27%
Chapter 13: Processes & Patterns of Development	8.0-9.0	HS-LS-1: From Molecules to Organisms 1-4: Mitosis & Differentiation	C1.0-The CELL 1.1 Cell Structures and Functions 1.1a. cell membrane functions 1.1b. differentiate between hypo-, hyper-, & isotonic 1.1c. compare/contrast pro- & eukaryotic cells 1.2 Differentiation of Cells 1.3 Specialized Cells	21-27%
Engage: One Hundred Years of Questions	1			
Explore/Explain #1: A Start in Development	2			
Explore/Explain #2: Generating Specialized Cells	2			
Elaborate: Development Gone Awry	2			
Evaluate: Development in Your Critter	1			
Other Lessons & Assessments	0.5-1			
Unit 6: ECOLOGY: Interactions and Interdependence in Living Systems	21.0-23.0	HS-LS: 2-1, 2-2, 2-6, 2-8	C4.0 C5.2, 5.3	14-18% 14%
Chapter 15: Interdependence Among Organisms	11.0-12.0	HS-LS-2: Ecosystems— Interactions, Energy, & Dynamics 2-1: Limiting Factors of Carrying Capacity 2-2: Math Calculations of Limiting Factors 2-6: Environmental Factors (Primary & Secondary Succession) 2-8: Population Behaviors	C4.0- INTERDEPENDENCE OF ORGANISMS 4.1 Organisms Both Cooperate and Compete 4.2 Population Dynamics C5.0-MATTER, ENERGY, & ORGANIZATION in LIVING SYSTEMS 5.2 Matter and Energy Flow in Living and Non-Living Systems 5.3 Earth Cycles Including Abiotic & Biotic Factors	14-18% 7% 7%
Engage/Explore: Observing the World Around Us	1			
Explore #2: Interactions in the World Around Us	1			
Explain: The Pasture Story	2.5			
Elaborate #1: Mystery on Easter Island	2			
Elaborate #2: Islands in the Sky	2.5			
Evaluate: Critters & Interdependence	2			
Other Lessons & Assessments	0.5-1			
Chapter 16: Decision Making in a Complex World	10.0-11.0	HS-LS-2: Ecosystems— Interactions, Energy, & Dynamics 2-1: Limiting Factors of Carrying Capacity 2-2: Math Calculations of Limiting Factors 2-6: Environmental Factors (Primary & Secondary Succession) 2-8: Population Behaviors	C4.0- INTERDEPENDENCE OF ORGANISMS 4.1 Organisms Both Cooperate & Compete 4.2 Population Dynamics C5.0-MATTER, ENERGY, & ORGANIZATION in LIVING SYSTEMS 5.2 Matter and Energy Flow in Living & Non-Living Systems 5.3 Earth Cycles Including Abiotic & Biotic Factors	14-18% 7% 7%
Engage: Tri-Lakes—Asking Questions	1			
Explore/Explain: Tri-Lakes—An Initial Study	2			
Explain #2: Tri-Lakes—Identifying Causes of Change	2			
Elaborate: The Gulf of Maine	3			
Evaluate: Tri-Lakes—Public Policy	2			
Other Lessons & Assessments	0.5-1			

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DURING & POST EOI UNITS OF INSTRUCTION NOT COVERED	15-35	SEP1 – SEP 8	PS 1.0 - PS 6.0	100%
Unit 7 EXPLAIN: Conducting Your Own Inquiry	Teacher Driven	SEP1 – SEP 8	PS 1.0 - PS 6.0	100%
Engage/Explore: Science All Around You	Teacher Driven			
Explain/Elaborate/Evaluate: Being an Experimental Scientist	Teacher Driven			
Unit 8 EVALUATE: Thinking Like a Biologist	Teacher Driven	SEP1 – SEP 8	PS 1.0 - PS 6.0	100%
PART A: Recognizing Biology in Medicine	Teacher Driven			
PART B: Chapter Challenges	Teacher Driven			
PART C: Building a Portfolio of Scientific Literacy	Teacher Driven			
DURING & POST EOI CHAPTERS NOT COVERED	15-35	HS-LS: 1-2, 1-3, 1-4	C1.0, C3.0	-----
Chapter 5: Maintaining Balance in Organisms	9.5	HS-LS: 1-3	C1.0	14-16%
Engage/Explore: The Body Responds	1	HS-LS-1: From Molecules to Organisms 1-3: Organism's Response (Internal & External)	C1.0-The CELL 1.1 Cell Structures and Functions 1.1a. cell membrane functions 1.1b. differentiate between hypo-, hyper-, and isotonic 1.3 Specialized Cells	7%
Explore #2: What's Your Temperature Now?	2			
Explain: Stepping Up the Pace	2			
Elaborate #1: On a scale of 0 to 14	2			
Elaborate #2: How Do They Stay So Cool?	1.5			
Evaluate: Homeostasis in your Critter	1.5			
Other Lessons & Assessments	0.5-1			
Chapter 6: Human Homeostasis—Health & Disease	12.5	HS-LS: 1-3	C1.0	14-16%
Engage: Pushing the Limits	0.5	HS-LS-1: From Molecules to Organisms 1-3: Organism's Response (Internal & External)	C1.0-The CELL 1.1 Cell Structures and Functions 1.1a. cell membrane functions 1.1b. differentiate between hypo-, hyper-, and isotonic 1.3 Specialized Cells	7%
Explore/Explain: Hospital Triage	2.5			
Explain #2: Self-Defense!	3			
Elaborate #1: Tony's Brain	2			
Elaborate #2: What's the Risk?	2.5			
Evaluate: Health Care Proposal	2			
Other Lessons & Assessments	0.5-1			

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DURING & POST EOI UNITS OF INSTRUCTION	15-35	HS-LS: 1-2	C3.0	-----
Chapter 7: Physical Fitness & Performance	10.5	HS-LS: 1-2	C3.0	21-27%
Engage: Thinking About Fitness	0.5	HS-LS-1: From Molecules to Organisms 1-2: Levels of Organization	C3.0: BIOLOGICAL DIVERSITY 3.1 Variations among Organisms 3.2 Natural Selection and Biological Adaptations 3.3 Behavior Patterns Can Be Used to Ensure Reproductive Success	3.1 7-9%
Explore: What Determines Fitness?	1.5			
Explain #1: What is in the Food You Eat?	1.5			
Explain #2: You Are What You Eat	3			
Elaborate: Structures & Functions	2			
Evaluate: Marathon	2			
Other Lessons & Assessments	0.5-1			
Chapter 10: Reproduction in Humans and Other Organisms	12	HS-LS: 1-4	C3.3	7%
Engage: A Zillion Ways to Make More	1	HS-LS-1: From Molecules to Organisms 1-4: Mitosis & Differentiation	C3.0 BIOLOGICAL DIVERSITY 3.3 Behavior Patterns Can Be Used to Ensure Reproductive Success	7%
Explore: Making Sense of Reproductive Strategies	2			
Explain: Making Sense of Human Reproduction	3			
Elaborate #1: Regulation of Human Reproduction	3			
Elaborate #2: Analyzing Reproductive Behaviors	2			
Evaluate: A Reproductive Strategy for your Critter	1			
Other Lessons & Assessments	0.5-1			
Chapter 14: The Human Life Span	12	HS-LS: 1-2, 1-4	C1.2, 1.3	14-16%
Engage: A Century of Photographs	1	HS-LS-1: From Molecules to Organisms 1-2: Levels of Organization 1-4: Mitosis & Differentiation	C1.0-The CELL 1.2 Differentiation of Cells 1.3 Specialized Cells	C1.2 7-9% C1.3 7%
Explore #1: Growing Up—What Does that Mean?	3			
Explore #2: A View of Life	2			
Explain: Life-Span Development—Examining the Contexts	3			
Elaborate/Evaluate: Cultural Diversity in Human Life Span	3			
Other Lessons & Assessments	0.5-1			

OKLAHOMA PASS PROCESS & OASS SCIENCE & ENGINEERING PRACTICES

PASS PROCESS STANDARDS:

P1.0-OBSERVE and MEASURE (10% III 6 qstns)

- 1.1 Qualitative/Quantitative Observations/Changes (4 qstns)
- 1.2 Appropriate Tools and
- 1.3 Use Appropriate System International SI (metric) Units (2 qstns=1.2/1.3)

P2.0-CLASSIFY (12-13% III 7 to 8 qstns)

- 2.1 Use Observable Properties to Classify (4 qstns)
- 2.2 Identify Properties of a Classification System (3-4 qstns)

P3.0-EXPERIMENTAL DESIGN (27 – 32% III 16 to 19 qstns)

- 3.1 Evaluate the Design of Investigations (4-5 qstns)
- 3.2 Identify Controlled Variables and Experimental Controls in an Experiment
- 3.4 Identify a Testable Hypothesis (5-6 qstns = 3.2/3.4)
- 3.3 Use Mathematics to Show Relationships (4-6 qstns)
- 3.5 Identify Potential Hazards and Practice Safety Procedures in all Science Activities (3 qstns)

P4.0-INTERPRET and COMMUNICATE (33 – 40% III 20 to 24 qstns)

- 4.1 Select Predictions Based on Observed Patterns of Evidence (4 – 5 qstns)
- 4.2 *Report/Display Data using Appropriate-Technology/Media***
- 4.3 Interpret Line, Bar, Trend, and Circle Graphs (4-5 qstns)
- 4.4 Accept or Reject Hypothesis (4-5 qstns)
- 4.5 Make Logical Conclusions Based on Experimental Data (4-5 qstns)
- 4.6 *Routinely Prepare a Written Report (Investigation/Event)* **
- 4.7 *Communicate/Defend Scientific Thinking through Conclusions***
- 4.8 Identify an Appropriate Graph or Chart (4 qstns)

P5.0-MODEL (13% III 8 qstns)

- 5.1 Interpret a Model which Explains a Given Set of Observations (4 qstns)
- 5.2 Select Predictions Based on Models, Using Mathematics when Appropriate (4 qstns)
- 5.3 *Compare a Given Model to the Living World***

P6.0-INQUIRY**

- 6.1 *Ask a Scientific Question, Formulate a Testable Hypothesis, and Design an Experiment***
- 6.2 *Design and Conduct Biological Investigations in which Variables are Identified and Controlled***
- 6.3 *Use a Variety of Technologies to Collect, Analyze, and Display Data***
- 6.4 *Inquiries Should Lead to Formulation of Explanations or Models***

****Not Tested**

OASS SCIENCE & ENGINEERING PRACTICES

SEP1-Asking Questions (for science) and Defining Problems (for engineering).

SEP2-Developing & Using Models

SEP3-Planning & Carrying out Investigations

SEP4-Analyzing & Interpreting Data

SEP5-Using Mathematics and Computational Thinking

SEP6-Constructing Explanations (for science) and Designing Solutions (for engineering)

SEP7-Engaging in Argument from Evidence

SEP8-Obtaining, Evaluating, and Communicating Information

OKLAHOMA PASS CONTENT & OASS BIOLOGY (HS-LS) CONTENT STANDARDS

PASS CONTENT STANDARDS:

C1.0-The CELL (21 – 27% /// 12 to 15 qstns)

- 1.1 Cell Structures and Functions (4 – 6 qstns)
 - 1.1a. cell membrane functions
 - 1.1b. differentiate between hypo-, hyper-, and isotonic
 - 1.1c. compare/contrast pro- & eukaryotic cells
- 1.2 Differentiation of Cells (4 – 6 qstns)
- 1.3 Specialized Cells (4 qstns)

C2.0-THE MOLECULAR BASIS OF HEREDITY (21 – 27% // 12 to 15 qstns)

- 2.1 DNA Structure and Function in Heredity (6 – 8 qstns)
- 2.2 Sorting and Recombination of Genes (6 – 7 qstns)

C3.0-BIOLOGICAL DIVERSITY (21 – 27% /// 12 to 15 qstns)

- 3.1 Variations among Organisms (4 – 6 qstns)
- 3.2 Natural Selection and Biological Adaptations (4 – 6 qstns)
- 3.3 Behavior Patterns Can Be Used to Ensure Reproductive Success (4 qstns)

C4.0-THE INTERDEPENDENCE OF ORGANISMS

(14 – 18% /// 8 to 10 qstns)

- 4.1 Organisms Both Cooperate and Compete (4 – 6 qstns)
- 4.2 Population Dynamics (4 – 6 qstns)

C5.0-MATTER/ENERGY/ORGANIZATION in LIVING SYSTEMS

(21% /// 12 qstns)

- 5.1 Complexity and Organization Used for Survival (4 qstns)
- 5.2 Matter and Energy Flow in Living and Non-Living Systems (4 qstns)
- 5.3 Earth Cycles Including Abiotic and Biotic Factors (4 qstns)

OASS BIOLOGY (HS-LS) CONTENT STANDARDS:

HS-LS-1: From Molecules to Organisms: Structure & Processes

- 1-1: Transcription & Translation
- 1-2: Levels of Organization
- 1-3: Organism's Response (Internal & External)
- 1-4: Mitosis & Differentiation
- 1-5: Photosynthesis
- 1-6: Hydrocarbon Backbones (Builds on LS 1-5)
- 1-7: Cellular Respiration (Builds on LS 1-6)

HS-LS-2: Ecosystems: Interactions, Energy, & Dynamics

- 2-1: Limiting Factors of Carrying Capacity
- 2-2: Math Calculations of Limiting Factors
- 2-3: Sources of Energy: Photosynthesis & Respiration; Aerobic & Anaerobic
- 2-4: Cycles of Matter
- 2-5: Effects of Photosynthesis & Respiration on Carbon Cycle
- 2-6: Environmental Factors (Primary & Secondary Succession)
- 2-8: Population Behaviors

HS-LS-3: Heredity, Inheritance, and Variation of Traits

- 3-1: DNA & Coding
- 3-2: Genetic Variations
- 3-3: Math & Punnett Squares

HS-LS-4: Biological Unity & Diversity

- 4-1: Common Ancestry & Diversity
- 4-2: DNA Evidence
- 4-3: Factors of Natural Selection
- 4-4: Types of Natural Selection
- 4-5: Environmental Factors that Effect Natural Selection