

## BIOLOGY YEAR AT A GLANCE RESOURCE (2016-17)

DATES	TOPIC/BENCHMARKS QUARTER 1	LAB/ACTIVITIES
8/22– 8/25/16	<b>I. Introduction to Biology</b> A. What is Biology B. Science in the real world	Lab 1: Seed Germination
8/26 – 9/01/16	<b>II. Ecosystem</b> A. Succession and changes (L.17.4) B. Impact from catastrophic events (L.17.8) C. Distribution of life in aquatic systems (17.2)	
9/02 – 9/08/16	<b>III. Populations in Ecosystem (L.17.5)</b> A. Population dynamics and graphs B. Carrying capacity C. Limiting Factors	Lab 2: Limiting Factor (L.17.5)
9/09 – 9/14/16	<b>IV. Energy Flow</b> A. Trophic levels and energy reduction (17.9) B. Biogeochemical Cycles: water and carbon (E.7.1, 18.12)	Lab 3: Energy and Ecosystem
9/15 – 9/20/16	<b>V. Human Impact on Environment (L.17.20)</b> A. Sustainability and environmental policy (L.17.11) B. Costs and benefits of renewable and non-renewable resources	Lab 5: Human Impact Stations
<b>Unit 1 Assessment (Topics I, II, III, IV, V) (Ecology) (Available: 9/20 – 10/04/16)</b>		
9/21 – 9/26/16	<b>VI. Origin of Life</b> A. Origins of Life (L.15.8, L.18.1) B. Endosymbiotic Theory (L.15.8)	Lab 6: Origin of Life: Theory vs Law
9/27 – 10/05/16	<b>VII. Theory of Evolution (L.15.1, L.15.10, L.14.26)</b> A. Evidence for the theory of evolution B. Trends in human evolution: brain structure, brain size, jaws, tools	Lab 7: Evidence of Theory of Evolution
10/06 – 10/14/16	<b>VIII. Mechanism of Evolution</b> A. Evolution through Natural Selection (15.1) B. Darwin's Natural Selection (15.13) C. Introduction to other Mechanisms (15.14, 15.15)	Lab 8: Natural Selection or Hominid Evolution
<b>Unit 2 Assessments (Topics VI, VII, VIII) (Evolution) (Available: 10/14 – 10/28/16)</b>		



10/17 – 10/20/16	<b>IX. Taxonomy</b> A. Classify organisms based on evolutionary relationships (15.4) B. Three Domains and Six Kingdoms (15.6) C. Reasons for changes in how organisms are classified. (15.5)	Lab 9: Classification of Fruits
10/21 – 11/01/16	<b>X. What Defines a Plant</b> A. Overview of Plants: Organs, tissues, evolution (14.7) B. Physiological Processes of Plants (Growth, Reproduction, Transpiration, Photosynthesis, Cellular respiration) (14.7 and 18.12)	Lab 10: Plant Structure or Flower Structure
<b>Quarterly Science Benchmarks Assessment (QSBA Q1) (Available: 10/28 – 11/18/16)</b>		
<b>DATES</b>	<b>TOPIC/BENCHMARKS / QUARTER 2</b>	<b>LAB/ACTIVITIES</b>
11/02 – 11/10/16	<b>XI. Cell energy: Photosynthesis</b> A. Equation of Photosynthesis (L.18.7) B. Where it occurs (L.14.7) C. Non plant examples of photosynthetic organisms (L.15.6) D. Role of carbohydrates as a source of energy (L.18.1)	Lab 11: Effect of Light on Photosynthesis
11/14 – 11/21/16	<b>XII. Cell energy: Cellular Respiration</b> A. Equation for Cellular Respiration (L.18.8, L.18.9) B. ADP/ATP cycle (L.18.10) C. Interrelation of Photosynthesis and Cellular Respiration (L.18.8)	Lab 12: Cellular Respiration
<b>Unit 3 Assessment (Topics XI, XII) (Classification) (H. Body) (Available: 11/21 – 12/05/16)</b>		
11/22 – 11/30/16	<b>XIII. Circulatory System (L.14.36)</b> A. Functions of the Heart B. Factors affecting blood flow	Lab 13: Factors Affecting Blood Flow
12/01 – 12/12/16	<b>XIV. Immune System</b> A. Basic Function of immune system B. Types of Responses (14.52) C. Human Health and Disease Transmission (14.6) D. Fighting Infectious Diseases (14.52, 15.13)	Lab 14: Death of Fuchsia Disease
12/13 – 12/20/16	<b>XV. Human Reproductive system (16.13)</b> A. Basic Anatomy and Physiology: Male and Female B. Human Development – Fertilization to Birth (all stages) C. External Membranes	Lab 15: Human Development stages
<b>Unit 4 Assessments (Topics XIII, XIV, XV) (Genetics/Molecular) Available: 12/20 – 01/17/17</b>		



12 /21 – 01/20/17	<b>XVI. Review of Cells</b> A. Cell theory and discovery (14.1) B. Compare/contrast cell types (14.3) (prokaryote, eukaryotic, plant, animal) C. Organelles and membrane: roles and functions (14.3) D. Role of lipids in cell membrane (18.1) E. Role of membrane in cell transport: Highly selective barrier (14.2)	Lab 16: Comparing cells
<b>01/24 – 02/10/16</b>	<b>Quarterly Science Benchmarks Assessment (QSBA Q2)</b>	

<b>DATES</b>	<b>TOPIC/BENCHMARKS QUARTER 3 (Cells, Genetics and Molecular Genetics)</b>	<b>LAB/ACTIVITIES</b>
<b>MYA Window: January 24th - February 17th0</b>		
01/24 – 01/31/17	<b>XVII. Comparing Cell Processes: Mitosis</b> A. Cell Cycle (L.16.14) B. Process of Mitosis: Nuclear Division (L.16.14) C. Mistakes in Mitosis (L.16.8) D. Asexual Reproduction: Lack of genetic variation.	
02/01 – 02/10/17	<b>XVIII. Comparing Cell Processes: Meiosis</b> A. Process: creating gametes and independent assortment (L.16.16) B. Crossing over and non-disjunction (L.16.16) C. Genetic variation resulting from meiosis (L.16.16) D. Comparison of Mitosis and Meiosis (L.16.17)	
<b>Unit 5 Assessments (Topics XVII, XVIII) (Cells) (Available: 02/10 – 02/24/17)</b>		
02/13 – 02/23/16	<b>XIX. Review Heredity - Mendelian</b> A. Law of segregation and independent assortment (16.1) B. Other patterns of inheritance: co-dominance, incomplete dominance, polygenic, sex-linked, multiple alleles (16.2) C. Punnett Squares: Mono-Dihybrid (16.1) D. Predict and analyze pedigrees E. Genetic Drift/Gene flow (15.14)	Lab 19: Investigating Inheritance
02/24 - 03/01/16	<b>XX. Biotechnology</b> A. Predicting impact on society, individual, and environment (L.16.10) B. Medical and ethical issues (L.16.10)	



DATES	TOPIC/BENCHMARKS QUARTER 3 (Cells, Genetics and Molecular Genetics)	LAB/ACTIVITIES
03/02 - 03/09/16	<b>XXI. DNA and Replication</b> A. Experiments and History B. Universal code for all organisms (16.9) C. Review of structure of DNA and chromosomes and location in cell D. Role of Nucleic acids in organisms (18.1) E. DNA Replication in Cell Cycle (16.3, 16.17) F. Types of mutations and effects (16.4)	Lab 21: DNA Extraction
03/10 - 03/17/16	<b>XXII. RNA and Protein Synthesis</b> A. RNA synthesis: Transcription (16.3, 16.5) B. Protein synthesis: Translation (16.5) C. Types of mutations: harmful, beneficial, variation, neutral (16.4)	Lab 22: Making Protein Sense
<b>Unit 6 Assessments (Topics XIX, XX, XXI, XXII) (Available: 03/17 – 03/31/16)</b>		
03/17 - 03/23/16	<b>XXIII. Review of macromolecules (18.1)</b> A. Types (carbohydrates, proteins, lipids, and nucleic acids) B. Structure and review function C. Review of connections to biological processes	Lab 23: Building Macromolecules
<b>Quarterly Science Benchmarks Assessment (QSBA Q3) (Available 03/27 – 04/07/16)</b>		
DATES	TOPIC/BENCHMARKS - QUARTER 4 (Biochemistry, Review for EOC, Factors Affecting Human Health)	LAB/ACTIVITIES
03/27 – 03/30/16	<b>XXIV. Role of Proteins in the Body: Enzymes (L.18.11)</b> A. As a catalyst to reduce activation energy B. Factors affecting enzyme function: pH temperature, concentration	Lab 24: Factors Affecting Enzyme
03/31 – 4/28/16	<b>XXV. BIOLOGY EOC AA BENCHMARKS CRUNCH TIME</b> A. Population Ecology (L.17.5)      B. Energy Flow (L.17.9) C. Human Impact (L.17.20)      D. Theory of Evolution (L.15.1) E. Classification (L.15.6)      F. Origins of Life (L.15.8) G. Natural Selection (L.15.13)      H. Cells (L.14.1,14.3) I. Plant Anatomy (L.14.7)      J. Macromolecules (L.18.1) K. Photosynthesis and Cellular Respiration (L.18.9) L. Properties of Water (L.18.12)      M. Genetics (L.16.1) N. DNA and RNA (16.3)	
<b>Biology EOC Exam (4/17 – 5/19/16)</b>		



DATES	TOPIC/BENCHMARKS QUARTER 3 (Cells, Genetics and Molecular Genetics)	LAB/ACTIVITIES
05/01 – 05/12/16	<b>XXVI. Pathogens: Prokaryotes, Viruses, Protists, and Fungi</b> A. Viruses B. Prokaryotes C. Protists D. Fungi	Lab 26: Fishing for Protists
05/15 - 05/26/16	<b>XXVII. Review of Animal Kingdom</b> A. Characteristics of Animals B. Evolutionary Body Plans C. Evolutionary Diversity D. Different Phyla and Orders	
05/30 – 06/08/16	<b>XXVIII. Genetic Diseases and Human Genetics</b> A. Human Genetic Disorders B. Human Genome C. Causes of Genetic Diseases D. Chromosomal Disorders E. Sex-Linked Genes	Lab 28: Genetic Disorders

