

**RIDGECROFT SCHOOL
STANDARD BIOLOGY SCIENCE**

PACING GUIDE

TOPICS/CONCEPTS	TIME	CURRICULUM OBJECTIVES 1.01, 1.02, 1.03, 1.04, 1.05	RESOURCE(S) BIOLOGY (PUBLISHER: Glencoe)
FIRST GRADING PERIOD			
THE BASIS OF LIFE <ul style="list-style-type: none"> • Cell Structure and Function • Photosynthesis and Cellular Respiration • Cell Division 	30	1.01, 1.02, 1.03, 1.04, 2.01, 2.02, 2.03, 2.04, 2.05	TEXTBOOK: Chapter 1, 2, 3, 4, 5 LABS: <ul style="list-style-type: none"> • Enzyme • Internet • Lab Drawing
SECOND GRADING PERIOD			
GENETICS <ul style="list-style-type: none"> • Fundamentals of Genetics • DNA, Genes, and Chromosomes • Protein Synthesis • The Biotechnology Revolution 	30	3.01, 3.03, 3.04, 4.04	TEXTBOOK: Chapters 5,6,7,8,9 LABS: <ul style="list-style-type: none"> • Chowan
THIRD GRADING PERIOD			
CHANGE AND DIVERSITY <ul style="list-style-type: none"> • The Theory Of Evolution • The History of Life • Human History • Classification 	16	3.04, 3.05, 4.01	TEXTBOOK: Chapters 10,11,13 LAB: <ul style="list-style-type: none"> • Fishy Frequencies
MONERANS, PROTISTS, AND FUNGI <ul style="list-style-type: none"> • Viruses and Monerans 	9	4.01, 4.02, 4.03	TEXTBOOK: Chapter 14 PROJECT: <ul style="list-style-type: none"> • Poster
REVIEW AND ASSESSMENT	5		
FOURTH GRADING PERIOD			
MONERANS, PROTISTS, AND FUNGI <ul style="list-style-type: none"> • Viruses and Monerans • Protists • Fungi 	13	4.01, 4.02, 4.03	TEXTBOOK: Chapters 15, 16
INVERTEBRATE ANIMALS <ul style="list-style-type: none"> • Sponges and Cnidarians • Worms and Mollusks • Anthropods 	17	4.01, 4.02, 4.03	TEXTBOOK: Chapters 21, 22, 23 LAB: <ul style="list-style-type: none"> • Dissection
FIFTH GRADING PERIOD			
INVERTEBRATE ANIMALS <ul style="list-style-type: none"> • Echinoderms and Invertebrate Chordates 	3	4.01, 4.02, 4.03	TEXTBOOK: Chapter 24
VERTEBRATE ANIMALS <ul style="list-style-type: none"> • Fishes and Amphibians • Reptiles and Birds • Animal Behavior 	20	4.01, 4.02, 4.03, 4.05	TEXTBOOK: Chapter 25, 26, 27, 28 LAB: <ul style="list-style-type: none"> • Dissection
ORGANISMS AND THE ENVIRONMENT <ul style="list-style-type: none"> • The Biosphere 	7	5.01	TEXTBOOK: Chapter 35
SIXTH GRADING PERIOD			
ORGANISMS AND THE ENVIRONMENT <ul style="list-style-type: none"> • Populations and Communities 	7	4.04, 4.05, 5.01, 5.02	TEXTBOOK: Chapter 36

PLANTS <ul style="list-style-type: none"> • Introduction to Plants • Energy, Transport, and Growth in Plants • Response and Reproduction in Plants • Origin and Diversity of Plants 	15	4.01, 4.02, 4.03, 5.02	TEXTBOOK: Chapters 17, 18, 19, 20 LAB:
REVIEW AND ASSESSMENT	5		

8/1/06

NC STANDARD COURSE OF STUDY

Learners will study biological systems. The strands and unifying concepts provide a context for teaching content and process skill goals. Instruction should focus on the following unifying concepts:

- Systems, Order and Organization
- Evidence, Models, and Explanation
- Constancy, Change, and Measurement
- Evolution and Equilibrium
- Form and Function

COMPETENCY GOAL 1: THE LEARNER WILL DEVELOP ABILITIES NECESSARY TO DO AND UNDERSTAND SCIENTIFIC INQUIRY.

- 1.01 Identify biological questions and problems that can be answered through scientific investigations.
- 1.02 Design and conduct scientific investigations to answer biological questions.
- Create testable hypotheses
 - Identify variables.
 - Use a control or comparison group when appropriate.
 - Select and use appropriate measurement tools.
 - Collect and record data.
 - Organize data into charts and graphs.
 - Analyze and interpret data.
 - Communicate findings.
- 1.03 Formulate and revise scientific explanations and models of biological phenomena using logic and evidence to:
- Explain observations.
 - Make inferences and predictions.
 - Explain the relationship between evidence and explanation.
- 1.04 Apply safety procedures in the laboratory and in field studies:
- Recognize and avoid potential hazards.
 - Safely manipulate materials and equipment needed for scientific investigations.
- 1.05 Analyze reports of scientific investigations from an informed, scientifically literate viewpoint including considerations of:
- Appropriate sample.
 - Adequacy of experimental controls.
 - Replication of findings.
 - Alternative interpretations of the data.

COMPETENCY GOAL 2: THE LEARNER WILL DEVELOP AN UNDERSTANDING OF THE PHYSICAL, CHEMICAL AND CELLULAR BASIS OF LIFE.

- 2.01 Compare and contrast the structure and functions of the following organic molecules:
- Carbohydrates.
 - Proteins.
 - Lipids.
 - Nucleic acids.
- 2.02 Investigate and describe the structure and functions of cells including:
- Cell organelles.
 - Cell specialization.
 - Communication among cells within an organism.
- 2.03 Investigate and analyze the cell as a living system including:
- Maintenance of homeostasis.

- Movement of materials into and out of cells.
- Energy use and release in biochemical reactions.

2.04 Investigate and describe the structure and function of enzymes and explain their importance in biological systems.

2.05 Investigate and analyze the bioenergetic reactions:

- Aerobic Respiration.
- Anaerobic Respiration.
- Photosynthesis.

COMPETENCY GOAL 3: THE LEARNER WILL DEVELOP AN UNDERSTANDING OF THE CONTINUITY OF LIFE AND THE CHANGES OF ORGANISMS OVER TIME.

3.01 Analyze the molecular basis of heredity including:

- DNA replication.
- Protein synthesis (transcription, translation).
- Gene regulation.

3.02 Compare and contrast the characteristics of asexual and sexual reproduction.

3.03 Interpret and predict patterns of inheritance.

- Dominant, recessive and intermediate traits.
- Multiple alleles.
- Polygenic inheritance.
- Sex-linked traits.
- Independent assortment.
- Test cross.
- Pedigrees.
- Punnett squares.

3.04 Assess the impact of advances in genomics on individuals and society.

- Human genome project.
- Applications of biotechnology.

3.05 Examine the development of the theory of evolution by natural selection including:

- Development of the theory.
- The origin and history of life.
- Fossil and biochemical evidence.
- Mechanisms of evolution.
- Applications (pesticide and antibiotic resistance).

COMPETENCY GOAL 4: THE LEARNER WILL DEVELOP AN UNDERSTANDING OF THE UNITY AND DIVERSITY OF LIFE.

4.01 Analyze the classification of organisms according to their evolutionary relationships.

- The historical development and changing nature of classification systems.
- Similarities and differences between eukaryotic and prokaryotic organisms.
- Similarities and differences among the eukaryotic kingdoms: Protists, Fungi, Plants, Animals.
- Classify organisms using keys.

4.02 Analyze the processes by which organisms representative of the following groups accomplish essential life functions including:

- Unicellular protists, annelid worms, insects, amphibians, mammals, non vascular plants, gymnosperms and angiosperms.
- Transport, excretion, respiration, regulation, nutrition, synthesis, reproduction, and growth and development.

4.03 Assess, describe and explain adaptations affecting survival and reproductive success.

- Structural adaptations in plants and animals (form to function).
- Disease-causing viruses and microorganisms.
- Co-evolution.

4.04 Analyze and explain the interactive role of internal and external factors in health and disease:

- Genetics.
- Immune response.
- Nutrition.
- Parasites.
- Toxins.

4.05 Analyze the broad patterns of animal behavior as adaptations to the environment.

- Innate behavior.
- Learned behavior.
- Social behavior.

COMPETENCY GOAL 5: THE LEARNER WILL DEVELOP AN UNDERSTANDING OF THE ECOLOGICAL RELATIONSHIPS AMONG ORGANISMS.

5.01 Investigate and analyze the interrelationships among organisms, populations, communities, and ecosystems.

- Techniques of field ecology.
- Abiotic and biotic factors.
- Carrying capacity.

5.02 Analyze the flow of energy and the cycling of matter in the ecosystem

- Relationship of the carbon cycle to photosynthesis and respiration.
- Trophic levels - direction and efficiency of energy transfer.

5.03 Assess human population and its impact on local ecosystems and global environments:

- Historic and potential changes in population.
- Factors associated with those changes.
- Climate change.
- Resource use.
- Sustainable practices/stewardship.