

Wilson Area School District Planned Course Guide

Title of Planned Course: Academic Biology

Subject Area: Science

Grade Level: 9

Course Description: This course includes the fundamentals of biology such as the characteristics of life, ecology, human impact, nature of cells, photosynthesis and cellular respiration, basic genetics, evolution, plants, and animals. Students will make connections between varying aspects of life, relationships between organisms, and our role in the biological world.

Time/Credit for this Course: 1 Credit / 1 Full School Year

Curriculum Writing Committee: Wendy Baltz, Jennifer DeBelli, Ashley White

Curriculum Map

August:

The Science of Biology

- What is Science?
- Scientific Method

September:

The Science of Biology

- Characteristics of Life
- Tools and Procedures

Chemistry of Life

- Properties of Water
- Macromolecules

Ecology

- What is Ecology?
- Energy Flow
- Cycles of Matter

October:

Ecology

- What Shapes an Ecosystem?
Biotic and Abiotic Factors, Relationships, Succession
- Land Biomes
- Populations and Limits to Growth

Humans in the Biosphere

- A Changing Landscape
- Renewable and Nonrenewable Resources
- Introduction to Biodiversity

November:

Cells

- Cell Theory and History
- Cell Structure and Functions
- Cell Transport

Photosynthesis

- ATP
- Overview of Photosynthesis
- Introduction to Reactions of Photosynthesis

December:

Cellular Respiration

- Chemical Pathways
- Introduction to Krebs Cycle and Electron Transport

Cell Growth and Division

- Cell Growth
- Cell Division (Mitosis)
- Meiosis

January:

DNA and RNA

- History and Structure of DNA
- Replication
- Transcription and Translation
- Mutations
- Biotechnology

February:

Genetics

- Introduction to Genetics
- Punnett Squares
- Mendelian Genetics
- Human Heredity

March:

Evolution

- Puzzle of the diversity of Life
- Darwin's Theory of Evolution
- Genes and Variation

Classification

- Historical Classification
- Modern Evolutionary Classification
- Kingdoms and Domains

April:

Animal Kingdom

- Invertebrates
 - o Porifera
 - o Cnidaria
 - o Platyhelminthes
 - o Nematoda
 - o Annelida
 - o Mollusca
 - o Arthropoda

- Echinodermata

May:

Animal Kingdom

- Vertebrates
- Chordata – Amphibians

Plant Kingdom

- Classification and Diversity
- Plant Structures and Functions
- Plant Reproduction

June:

Microorganisms

- Introduction to Bacteria
- Introduction to Viruses

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: The Science of Biology

Time frame: 10 Days

State Standards: 3.1.10A, 3.1.10.E, 3.2.10.A, 3.2.10.B, 3.2.10.D, 3.7.10B, 3.8.10B, 4.3.10.B

Anchor(s) or adopted anchor: S11.A.1.1.1, S11.A.1.1.2, S11.A.1.1.3, S11.A.1.1.4, S11.A.1.1.5, S11.A.1.2.1, S11.A.1.2.2, S11.A.2.1.1, S11.A.2.1.2, S11.A.2.1.3, S11.A.2.1.4, S11.A.2.1.5, S11.A.2.2.1, S11.A.2.2.2

Essential content/objectives: At end of the unit, students will be able to:

- Explain what the goal of science is and what a hypothesis is.
- Describe and apply the steps of the scientific method.
- Describe how scientists test hypotheses.
- Explain how a scientific theory develops.
- Explain the characteristics of living things.
- Explain how life can be studied at multiple levels.
- Use and apply the metric system.
- Appropriately use a compound light microscope.
- Describe common laboratory techniques
- Learn and apply safety techniques in the laboratory.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- What is Life? Lab
- Microscope Lab
- Graphing Activities
- Measurement Worksheets

Extensions: Study Island, Additional Graphing or Data Interpretation Activities, Detailed Microscopic Studies

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials

Board Approved
August 2009

Assessments: Quizzes, Tests, Homework, Student Participation, Labs,
Questioning

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Properties of Water and Organic Molecules

Time frame: 7 Days

State Standards: 3.1.10C, 3.1.10E, 4.8.10A, 3.1.10A, 4.3.10.C, 3.1.10.C, 3.2.10.B, 4.6.10.A, 4.7.10B

Anchor(s) or adopted anchor: S11.A.1.3.2, S11.A.1.3.3, S11.A.3.1.2, S11.A.3.3.1, S11.B.1.1.1, S11.B.1.1.2

Essential content/objectives: At end of the unit, students will be able to:

- List and explain the properties of water.
- Explain why water molecules are polar.
- Differentiate between solutions and suspensions.
- Explain the difference between acidic and basic solutions.
- Describe the structure and function of each group of organic compounds.
- Explain how chemical reactions affect chemical bonds in compounds.
- Describe how energy changers affect how easily a chemical reaction will occur.
- Explain why enzymes are important to living things.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Properties of Water Lab
- Acid and Base Lab
- Energy Activity
- Review Game

Extensions: Study Island, Build Molecular Models using model kits

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Chapter Review Packet

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work, Demonstrations

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials, Model Kits

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Ecology

Time frame: 12 Days

State Standards: 3.2.10.A, 4.3.10.B, 3.1.10.A, 3.1.10.C, 3.1.10E, 4.8.10.A ,
3.1.10.B, 4.3.10B, 3.2.10.B, 4.3.10.C, 4.6.10A, 4.2.10D, 4.3.10B, 4.2.10C,
4.2.10.D, 4.4.10.C, 3.8.10C, 4.1.10.B

Anchor(s) or adopted anchor: S11.A.1.2.1, S11.A.1.2.2., S11.A.1.3.1.,
S11.A.1.3.2., S11.A.1.3.3, S11.A.1.3.4, S11.A.3.1.1, S11.A.3.1.2, S11.A.3.1.3,
S11.A.3.1.4, S11.A.3.2.1, S11.A.3.2.2, S11.A.3.3.1, S11.A.3.3.2, S11.A.3.3.3,
S11.B.3.1.1, S11.B.3.1.2, S11.B.3.1.3, S11.B.3.1.4, S11.B.3.1.5, S11.B.3.2.1,
S11.B.3.2.2, S11.B.3.2.3, S11.B.3.3.1, S11.B.3.3.2,

Essential content/objectives: At end of the unit, students will be able to:

- Identify the levels of organization that ecologists study.
- Trace the flow of energy through living systems.
- Evaluate the efficiency of energy transfer among organisms in an ecosystem.
- Describe how matter cycles through the living and nonliving parts of an ecosystem.
- Describe how the availability of nutrients affects the productivity of an ecosystem.
- Explain how biotic and abiotic factors influence an ecosystem.
- Identify interactions that occur within communities.
- Explain the process of succession.
- Identify the characteristics of major land biomes.
- List the characteristics used to describe a population.
- Identify the factors that affect population size.
- Identify factors that limit population growth.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Practice Food Webs
- Activity to identify relationships between organisms
- Complete a biome chart
- Predator/Prey Graphing activity

Extensions: Study Island, Food Web Project, Biome Project

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Chapter Review Packet

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Strange Days on Planet Earth – Predators video

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Humans in the Biosphere

Time frame: 4 Days

State Standards: 3.2.10.A, 4.3.10.B, 3.1.10.C, 3.1.10.E, 4.8.10.A, 4.2.10.C, 4.4.10C, 3.8.10C

Anchor(s) or adopted anchor: S11.A.1.2.1, S11.A.1.2.2, S11.A.1.3.1, S11.A.1.3.2, S11.A.1.3.4, S11.B.3.3.1, S11.B.3.3.2, S11.B.3.3.3

Essential content/objectives: At end of the unit, students will be able to:

- Describe human activities that can affect the biosphere.
- Explain how environmental resources are classified.
- Identify the characteristics of sustainable use.
- Describe how human activities affect land, air and water resources.
- Define biodiversity and explain its value.

Core Activities: Students will complete/participate in the following:

- Outline chapter
- Chapter Worksheets
- Make timeline of how humans have altered the biosphere.
- Jigsaw activity regarding examples of renewable and nonrenewable resources.
- Discuss Easter Island
- Show video clip of “How Stuff is Made”

Extensions: Study Island, Complete a chart listing the pros and cons of different types of energy, Research a Threatened or Endangered Pennsylvania Species

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Endangered Species Video.

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: The Cell

Time frame: 13 Days

State Standards: 3.1.10.A, 3.2.10A, 3.1.10.C, 3.1.10.E, 4.8.10.A, 4.3.10.C, 3.1.10.B, 3.2.10B, 4.1.10B, 4.6.10A, 3.3.10.A, 3.3.10.B, 4.6.10.A, 4.7.10.B

Anchor(s) or adopted anchor: S11.A.1.1.1, S11.A.1.1.2, S11.A.1.1.4, S11.A.1.1.5, S11.A.1.3.2, S11.A.1.3.3, S11.A.3.1.2, S11.A.3.1.3, S11.A.3.1.4, S11.A.3.2.1, S11.A.3.2.2, S11.A.3.2.3, S11.B.1.1.1, S11.B.1.1.2, S11.B.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Explain the cell theory and the history of the discovery of cells.
- Differentiate between eukaryotes and prokaryotes as well as plant and animal cells.
- List and explain cell parts and functions.
- Describe what happens during diffusion.
- Differentiate between osmosis, facilitated diffusion and active transport.
- Describe what cell specialization is.
- Identify the organization levels in multicellular organisms.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Cell Drawings
- Cell Analogy Project
- Organelle Chart
- Cell Lab
- Diffusion Demonstration
- Elodea Osmosis Lab
- Egg Lab

Extensions: Study Island, Create a Cell City, Devise a Cell Crossword online

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Cell Model, Cell Song, Cell Organelle Children's book, Create Cell Review Games

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work, Review Packet, Review Game

Board Approved
August 2009

Materials & Resources: Textbook, PowerPoints, Overheads, Video – “Inside a Cell”, Lab Materials

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Photosynthesis and Cellular Respiration

Time frame: 8 Days

State Standards: 3.1.10A, 3.1.10E, 4.3.10.C, 3.3.10A, 3.3.10B, 4.6.10.A, 4.7.10B

Anchor(s) or adopted anchor: S11.A.3.1.1., S11.A.3.1.2, S11.A.3.1.3, S11.A.3.1.4, S11.B.1.1.1, S11.B.1.1.2, S11.B.1.1.3,

Essential content/objectives: At end of the unit, students will be able to:

- Explain where plants get the energy they need to produce food.
- Describe the role of ATP in cellular activities.
- State the overall equation for photosynthesis.
- Describe the role of light and chlorophyll in photosynthesis.
- Describe the structure and function of a chloroplast.
- Identify input/output of the light dependent reactions and Calvin Cycle.
- Describe what conditions affect the rate of photosynthesis.
- Explain what cellular respiration is and what happens during glycolysis.
- Differentiate between alcoholic and lactic acid fermentation.
- Identify input/output of the Krebs Cycle and the Electron Transport Chain.
- Compare photosynthesis and cellular respiration.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Concept Maps
- Pigment Chromatography Lab
- Rate of Photosynthesis Lab with yew sprig
- Fermentation Lab

Extensions: Study Island, Peer Tutoring

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring,

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials

Board Approved
August 2009

Assessments: Quizzes, Tests, Homework, Student Participation, Labs,
Questioning, projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Cell Growth and Division

Time frame: 12 Days

State Standards: 3.2.10.A, 4.3.10B, 3.3.10A, 3.3.10B, 4.6.10.A, 4.7.10.B, 3.3.10.C

Anchor(s) or adopted anchor: S11.A.1.2.1, S11.B.1.1.1, S11.B.1.1.3, S11.B.2.2.1, S11.B.2.2.2

Essential content/objectives: At end of the unit, students will be able to:

- Explain the problems growth causes for cells and how cell division helps prevent these problems.
- Name and describe the main events of the cell cycle.
- Describe what happens during the four stages of mitosis.
- Describe how cancer cells are different from other cells.
- Contrast the chromosome number of body cells and gametes.
- Summarize the events of meiosis.
- Contrast mitosis and meiosis.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Egg in food coloring demo
- Mitosis Lab using onion root tips and whitefish blastula slides
- Pipe Cleaner Activities to simulate mitosis or meiosis
- Bead Activity to simulate crossing over
- Karyotype Lab
- Review Packet
- Review Game

Extensions: Study Island, Peer Tutoring, Cancer PowerPoint

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Practice with pipe cleaners or beads.

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials,

Board Approved
August 2009

Cancer PowerPoint: <http://cancer.gov/cancertopics/understandingcancer>,
Pictures of cancerous cells,

Assessments: Quizzes, Tests, Homework, Student Participation, Labs,
Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: DNA and RNA

Time frame: 30 Days

State Standards: 3.7.10.B, 3.8.10.B, 3.3.10A, 3.3.10.B, 4.6.10.A, 4.7.10.B, 3.3.10.C, 3.3.10.D, 3.4.10.D, 4.7.10C, 3.3.10.C, 4.2.10.C, 4.4.10.C, 3.8.10C

Anchor(s) or adopted anchor: S11.A.2.2.1, S11A.2.2.2, S11.B.1.1.1, S11.B.1.1.2, S11.B.1.1.3, S11.B.2.1.2, S11.B.2.1.3, S11.B.2.2.1, S11.B.3.3.3

Essential content/objectives: At end of the unit, students will be able to:

- Summarize the relationship between genes and DNA.
- Describe the overall structure of a DNA molecule.
- Relate the DNA molecule to chromosome structure.
- Summarize the events of DNA replication.
- Contrast and compare DNA and RNA.
- Describe the three main types of RNA.
- Describe transcription and the editing of RNA.
- Summarize translation.
- Explain the relationship between genes and proteins.
- Contrast gene mutations and chromosomal mutations.
- Explain the purpose of selective breeding.
- Explain how scientists manipulate DNA.
- Summarize what happens during transformation.
- Describe the usefulness of some transgenic organisms to humans.
- Summarize the main steps in cloning.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- DNA extraction Lab from Cheek Cells
- DNA Replication paper folding activity
- Transcription/Translation video segment
- Hands on simulation of translation
- Watch DNA, Cracking the Code DVD
- Review Packets
- DNA Jeopardy Review Game

Extensions: Study Island, Peer Tutoring, Show the movie GATTACA, Read and summarize recent DNA articles

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Building a DNA model

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials, Human Genome Video (Beginning Segment), Cracking the Code DVD

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Genetics

Time frame: 25 Days

State Standards: 3.3.10A, 3.3.10B, 4.6.10.A, 4.7.10.B, 3.3.10.C, 3.3.10.D, 3.4.10.D, 4.7.10.C

Anchor(s) or adopted anchor: S11.B.1.1.2, S11.B.1.1.3, S11.B.2.2.1, S11.B.2.2.2, S11.B.2.2.3, S11.B.2.1.2, S11.B.2.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Summarize Mendel's conclusion about inheritance.
- Differentiate between genotypes and phenotypes.
- Differentiate between dominant and recessive traits.
- Explain Mendel's Law of Segregation and Law of Independent Assortment
- Explain the concept of alleles and chromosomal inheritance.
- Complete monohybrid, dihybrid, codominant, incomplete dominant and sex – linked punnett squares.
- Interpret a pedigree.
- Give an example of a trait that has multiple alleles.
- Describe examples of inheritance of human traits.
- Explain how small changes in DNA can cause genetic disorders.
- Be able to give examples of human genetic disorders and chromosomal disorders.
- Describe sex linked disorders and why they are more common in males than females.
- Explain the process of X chromosome inactivation.
- Summarize nondisjunction and the problems it can cause.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Punnett Square Problems
- Reebop Lab
- Coin Toss Lab

Extensions: Study Island, Peer Tutoring, Brave New Babies Article, Design a Species Project, Create a Pedigree

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring,

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work, Peer Instruction to complete punnett squares

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials,

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Evolution

Time frame: 15 Days

State Standards: 3.1.10.A, 3.2.10.A, 3.1.10.E, 3.3.10.C, 3.3.10.D, 3.4.10.D, 4.7.10.C

Anchor(s) or adopted anchor: S11.A.1.1.1, S11.A.1.1.2, S11.A.1.1.3, S11.A.1.1.4, S11.A.1.1.5, S11.B.2.1.1, S11.B.2.1.2, S11.B.2.1.3, S11.B.2.1.4,

Essential content/objectives: At end of the unit, students will be able to:

- Describe the pattern Darwin observed among organisms of the Galapagos Islands.
- State how Hutton and Lyell described geological change.
- Identify how Lamarck thought species evolved.
- Describe Malthus's theory of population growth.
- Describe how natural variation is used in artificial selection.
- Explain how natural selection is related to a species' fitness.
- Identify evidence Darwin used to present his case for evolution.
- State Darwin's theory of evolution by natural selection.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Jigsaw with current evolution articles
- Concept Map
- National Geographic Darwin Article
- Evolution Keyword Puzzle
- Evolution of the horse timeline
- Great Transformations Video
- Review Packet

Extensions: Study Island, Peer Tutoring, Peppered Moth Lab, Mouse Predator - Prey Lab

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Teddy Graham Lab.

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Board Approved
August 2009

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials,
Great Transformations Video

Assessments: Quizzes, Tests, Homework, Student Participation, Labs,
Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Classification

Time frame: 5 Days

State Standards: 3.1.10A, 3.1.10E, 4.3.10.C, 3.1.10.C, 3.2.10.B, 3.3.10.A, 3.3.10B, 4.6.10A, 4.7.10B

Anchor(s) or adopted anchor: S11.A.3.1.2, S11.A.3.3.2, S11.B.1.1.1, S11.B.1.1.2, S11.B.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Explain how living things are organized for study.
- Describe binomial nomenclature.
- Explain Linneaus's system of classification.
- Explain how evolutionary relationships are important in classification.
- Identify the principle behind cladistic analysis.
- Explain how we can compare very dissimilar organisms.
- Name the six kingdoms of life as they are now identified.
- Describe the three domain system of classification.

Core Activities: Students will complete/participate in the following:

Chapter Worksheets
What Am I? Activity
Dichotomous Key Lab

Extensions: Study Island, Peer Tutoring, Woolly Mammoth Genome Article, Practice using Dichotomous Keys

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring, Classification of Common Objects Activity, Classifying Organisms Poster Activity

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Animal Kingdom

Time frame: 20 Days

State Standards: 3.3.10.A, 3.3.10.B, 4.6.10.A, 4.7.10.B, 3.3.10.C, 3.3.10.D, 3.4.10.D, 4.7.10.C

Anchor(s) or adopted anchor: S11.B.1.1.1, S11.B.1.1.2, S11.B.2.1.1

Essential content/objectives: At end of the unit, students will be able to:

- List the characteristics all animals share.
- Describe the essential functions all animals carry out.
- Identify the important trends in animal evolution.
- Identify the characteristics that all chordates share.
- Describe the two groups of nonvertebrate chordates.
- Compare and Contrast the structure and functions of the basic body plans of animals in the following the phyla:
 - Invertebrates
 - Porifera
 - Cnidaria
 - Platyhelminthes
 - Nematoda
 - Annelida
 - Mollusca
 - Arthropoda
 - Echinodermata
 - Vertebrates
 - -Chordata
 - Class Amphibia

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Completion of comparative charts
- Labeling Diagrams
- Lab – Comparison of Poriferans and Cnidarians (slide lab)
- Lab – Hydra Behavior
- Lab – Planarian Lab
- Lab – Earthworm Dissection
- Video – Incredible Suckers
- Lab – Mollusk shell ID lab
- Lab – Starfish Dissection

- Lab – Grasshopper External Observations
- Lab – Frog Dissection
- Shape of Life DVDs

(Alternative computer dissection labs available for all dissection labs)

Extensions: Study Island, Peer Tutoring, Online Dissections

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring,

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials, Shape of Life DVDs, Incredible Suckers Video, Shell ID Books

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Plant Kingdom

Time frame: 8 Days

State Standards: 3.1.10A, 3.1.10E, 4.3.10.C, 3.1.10.C, 3.2.10.B, 3.3.10.A, 3.3.10B, 4.6.10A, 4.7.10B

Anchor(s) or adopted anchor: S11.A.3.1.2, S11.A.3.3.2, S11.B.1.1.1, S11.B.1.1.2, S11.B.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Identify the characteristics of gymnosperms and angiosperms.
- Differentiate between monocots and dicots.
- Explain how water is transported throughout a plant.
- Describe how the products of photosynthesis are transported throughout a plant.
- Identify the reproductive structures of angiosperms.
- Describe the function and structure of roots and stems.
- Describe how the structure of a leaf enables it to carry out photosynthesis.
- Describe how gas exchange takes place in a leaf.

Core Activities: Students will complete/participate in the following:

- Chapter Worksheets
- Flower Dissection
- Lab – Leaf Cross Section
- Fast Plant Lab (will need to start 35 -40 days in advance)

Extensions: Study Island, Peer Tutoring,

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring,

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, Projects

Curriculum Scope & Sequence

Planned Course: Academic Biology

Unit: Bacteria and Viruses

Time frame: 5 Days

State Standards: 3.1.10A, 3.1.10E, 4.3.10.C, 3.1.10.C, 3.2.10.B, 3.3.10.A, 3.3.10B, 4.6.10A, 4.7.10B

Anchor(s) or adopted anchor: S11.A.3.1.2, S11.A.3.3.2, S11.B.1.1.1, S11.B.1.1.2, S11.B.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Describe the factors used to identify prokaryotes.
- Describe the ecological roles that bacteria play in the environment.
- Explain how bacteria cause disease.
- Describe the structure of a virus.
- Explain how viruses cause infection.

Core Activities: Students will complete/participate in the following:

- Outline Chapter
- Chapter Worksheets
- AIDS activity

Extensions: Study Island, Peer Tutoring,

Remediation: Study Island, Review Quizzes, Review Worksheets, Peer Tutoring,

Instructional Methods: Direct instruction using notes and key terms, Cooperative Learning during labs, Group Discussion, Teacher modeling and visual aids, Independent Student Work

Materials & Resources: Textbook, PowerPoints, Overheads, Lab Materials

Assessments: Quizzes, Tests, Homework, Student Participation, Labs, Questioning, Projects