



PINEWOOD – THE AMERICAN INTERNATIONAL SCHOOL OF THESSALONIKI, GREECE

NAME OF COURSE: Biology

GRADE LEVEL: 9

SCHOOL YEAR: 2011 – 2012

COURSE DESCRIPTION

Biology is a laboratory-oriented course designed to give students a background in biological concepts as well as experience in using the methods of scientific inquiry. The course focuses on the study of cell and the life processes that occur within the cell, on the molecular basis of heredity and biological evolution. Human biology, plant physiology as well as population growth, communities and ecosystem dynamics will be studied. Critical thinking and participation is promoted through class discussions. The laboratory part aims to develop adequate skills in common laboratory procedures and techniques as well as the ability to judge and assess their uses and limitation. The ability to devise simple experiments, to make observations, to collect data and to interpret results is also developed.

LEARNING OBJECTIVES

- To describe the categories of biochemicals common to all living things.
- To explain the cell theory, describe several cellular functions and structures as well as study cell division.
- To explain the basic mechanisms of heredity.
- To describe the structure and function of DNA and RNA molecules, including protein synthesis.
- To discuss scientific theories of how life began and to explain the theory of evolution developed by Darwin and Wallace.
- To gain an understanding of the structure, physiology and reproduction in plants.
- To gain an understanding of the main organ systems in the human body.
- To understand population growth as well as ecosystem dynamics.

SCOPE AND SEQUENCE *

QUARTER I

Chapter 2

Chemical basis of life: Chemicals in organisms – Basics of Chemistry – Chemistry at Work – Chemistry in Life Processes – Water and Solutions.

Chapter 3

Cell Structure and Functions: A Look at Cells – Basic Cell Structure – Cell Organelles – Cell Diversity – Cells and Their Environment

Chapter 4

Photosynthesis and Cellular Respiration: Energy and ATP – Photosynthesis – Cellular Respiration

Chapter 5

Cell Division: When Do Cells Divide? - How Do Cells Divide?

QUARTER II

Chapter 6

Fundamentals of Genetics: Patterns of inheritance – Principles of Inheritance – Genetics and Predictions – Predictions and People – Difficult Predictions.

Chapter 5

What is Meiosis - New Chromosome Combinations

Chapter 7

DNA, Genes, and Chromosomes: Molecules of Heredity – DNA Structure and Replication – Linked Genes – Sex Linkage – The Human Gene Map

Chapter 8

Protein Synthesis: From Genotype to Phenotype – Protein and Phenotype – Changes in Chromosomes – Genes and Cancer.

QUARTER III

Overview of Comparative Plant and Animal Anatomy:

Chapter 17

The Structure of Plants: Leaves – stems – roots – flowers – seeds – fruits.

Chapter 29

Human Body Systems: Circulatory System - Skeletal System - Integumentary System - Respiratory System - Excretory System - Nervous System - Digestive System - Endocrine System - Immune System - Lymphatic System - Muscular System - Reproductive System.

Respiration and Transport in Plants and Animals:

Chapter 18

Respiration and Transport in Plants: Cellular Respiration - Transport in Roots - Transport in stems - Transport in Leaves.

Chapter 31

Respiratory Systems and Circulatory Systems: Gas exchange in Animals – The Human Respiratory System – Process of Breathing – Internal Transport in Animals – The Human Heart - Human Blood Vessels – Plasma and Blood Cells – Blood Types.

Reproductive Systems in Plants and Animals:

Chapter 19

Reproduction in Plants: Asexual Reproduction in Plants – Sexual Reproduction in Plants – Focus on Flowers.

Chapter 33

QUARTER IV

Chapter 10

The Theory of Evolution: Variation and Adaptation – Darwin and His Theory – Tracking Changes – Origin of Species – Population Genetics.

Chapter 36

Populations and Communities: Population Growth – Limits on Population Growth – Communities – Ecological Succession.

Chapter 37

Ecosystem Dynamics: Ecosystem Structure – Energy Levels – Chemical Cycles.

Science Fair Projects

**Note that the order in scope and sequence is subject to change during the school year.*

HOMEWORK POLICY

All homework must be handed in on time. Late homeworks get minus 10% penalty for their grade. No late homework will be accepted beyond four days.

ASSESSMENT

Grades are given for:

- Semester exams to test the student's mastery of the concepts.
- Chapter tests to test the student's ability to follow the course.
- Quizzes announced and unannounced to test how well the student is keeping up and understands concepts.
- Homework and class-work assignments used for reinforcement, review and evaluation.
- Laboratory reports
- Student effort and application
- Participation in class discussion
- Independent Science Fair project.

Quarter grades are calculated as follows:

Tests – 60 %

Homework – 20 %

Lab work and lab reports – 10 %

Quizzes – 5 %

Participation – 5 %

RESOURCES

- Textbook: Strauss Eric, Lisowski Marilyn 2000, Biology-The Web of Life. Scott Foresman, Addison Wesley, New York

- Laboratory
- School library
- Internet
- PowerPoint presentations

ACADEMIC HONESTY

Academic honesty is fundamental to the integrity and operation of our school. Acts of academic dishonesty, including plagiarism (the act of presenting others' words and ideas as one's own without crediting the source), stealing in quizzes and tests, copying work from other students or allowing their own work to be copied, or using notes during a test, are considered serious offences. The consequences of academic dishonesty will be a zero grade on the specific test/assignment, and additional disciplinary action. The said student will be ineligible or removed from the National Honor Society.