Adv Pl Biology

Pre-Requisites: Algebra I recommended
Credits: 0.5 (per segment)
Estimated Completion Time: 2 segments / 32-36 weeks
Earliest Start Date: March 2014

Description

This challenging course is designed to provide a college-level experience and prepare students for the AP exam in early May. Over two semesters, students are engaged in a wide variety of activities, with substantial emphasis on interpreting and collecting data in virtual labs, writing analytical essays, and mastering biological concepts and connections. The key themes of the AP Biology course are the scientific processes, the effects of science on technology and society, the chemistry and make-up of living organisms, genetics, diversity, and evolution.

Throughout this course, students are expected to answer questions, analyze data, discuss real-world connections, and complete lab activities. The primary emphasis is to develop an understanding of concepts rather than memorizing terms and technical details.

Students must take the Advanced Placement Exam in order to receive Advanced Placement credit. Students who do not take the AP® Exam will be awarded an alternative course credit.

Major Topics and Concepts

Segment 1

Science as a Process
Relationship of Structure to Function
Energy Transfer
Regulation
Science
Technology & Society
Continuity and Change
Evolution
Interdependence in Nature
Scientific method
Basic chemistry
Organic chemistry
Polymerization
Isomers
Functional groups
Biochemistry
Properties of water
Metabolism
Enzymes
Cell structure and function
Cell processes
Cell division
Cell research including information on cancer cells, and gametogenesis
Inheritance and genetics
Mendel's work in genetics
Statistical analysis of genetic information
Non-Mendelian patterns of inheritance
Nuclear processes, role of DNA and/or RNA in replication, transcription and translation
Mutations and how these can be seen in populations
DNA technology
Evolution
Genetic drift and gene flow
Mutations in populations
Non-random mating
Natural selection
Hardy-Weinberg equilibrium
·Macroevolution

Segment 2

Relationship of Structure to Function
Continuity and Change
Interdependence in Nature
Evolution
Energy Transfer
Regulation
Systematics
Viruses, bacteria, and fungi
Plant evolution and diversity
Alternation of generations/plant life cycles
Plant structure and function
Plant growth and reproduction
Plant nutrients and hormones
Photosynthesis
Phylogeny and animal diversity
Transport in animal systems
Immunology
Osmoregulation
Chemical regulation
Reproduction and development
Nervous system
Muscular and skeletal system
Levels of organization
Biotic and abiotic factors
Ecosystems, populations, and communities
Symbiosis, food webs, and keystone predators
·Biogeochemical cycles in the environment

Required Materials

Household items for lab experiments

Course Objectives

Grading Policy

Besides engaging students in challenging curriculum, the course guides students to reflect on their learning and evaluate their progress through a variety of assessments. Assessments can be in the form of practice lessons, multiple choice questions, writing assignments, projects, research papers, oral assessments, and discussions. The course will use the state-approved grading scale and each course contains a unique end of course assessment. This assessment counts for 20% of the student's overall grade and must be passed with a score of 60% or higher.

Students must take the Advanced Placement exam to receive Advanced Placement credit.

Communication Policy

To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, "any pace" still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, simulated AP exams, projects, discussion-based assessments, and discussions. Students are expected to maintain regular contact with teachers; the minimum requirement is monthly. When teachers, students, and parents work together, students are successful.

Students must take the Advanced Placement Exam in order to receive Advanced Placement credit. Students who do not take the AP® Exam will be awarded an alternative course credit.