

Pratima Patil
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Honors Biology - Academy

Grade 9

Course of Study Outline

The Honors Biology curriculum begins on the atomic level and proceeds in the following order; the molecular level, the cell level, metabolism in the cell, cell respiration, photosynthesis, genetics in the cell, protein synthesis in the cell, biotechnology, origin of the cell, evolution of life, viruses, bacteria, protists, fungi, plants, animals, and all with a blending of ecological principles throughout.

The course is designed to provide students with a preview of the demands associated with a college level science course. The course sequence is designed to provide students with the essentials for a smooth transition to college life and academic success. Academic skills will be developed through lectures and laboratory exercises. These skills include critical reading, thinking, and listening, open ended answer writing, speaking, and using internet resources. Coping with peer pressures and the impact of a healthy lifestyle will be addressed. Opportunities will be provided for self-evaluation and growth in basic learning strategies as well as personal and career goals. Feeling connected and sharing a common educational experience with other freshmen are important goals of this course.

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Course Content

UNIT 1: THE LIFE OF A CELL

The Chemical Basis of Life: Atoms, Molecules, and Water

The Molecules of Cells: Carbon Compounds

A Tour of the Cell: Cell Organelles

The Working Cell: Cell Energy, Enzymes, and Cellular Transport

How Cells Harvest Chemical Energy: Cellular Respiration & Photosynthesis

UNIT 2: CELLULAR REPRODUCTION AND GENETICS

The Cellular Basis of Reproduction and Inheritance: Mitosis & Meiosis

Pattern of Inheritance: Mendelian Genetics

Molecular Biology of a Gene: DNA Replication & Protein Synthesis

The Control of Gene Expression: Gene Regulation, and Cloning

DNA Technology and Genomics: Plasmids, Restriction Fragments, and PCR

UNIT 3: CONCEPTS OF EVOLUTION

How Populations Evolve: Darwin's Theory, Variation, and Natural Selection

The Origin of Species: Speciation, and Macroevolution

Tracing Evolutionary History: Earth's Evolutionary History, Phylogeny, and Systematics

UNIT 4: THE EVOLUTION OF BIOLOGICAL DIVERSITY

The Origin and Evolution of Microbial Life: Prokaryotes and Protists

UNIT 7: ECOLOGY

Biosphere: Earth's Diverse Environments – Biomes

Population Dynamics: Density, Dispersal Patterns, Human Population Growth

Communities and Ecosystems: Food Chains, Food Webs, Energy Flow, Chemical Cycling

Conservation Biology: Conserving Populations, Species and Ecosystems

*****Instructor reserves the right to modify the syllabus with adequate notice***

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Suggested preparation:

1. Students are required to organize their notebooks, and manage their time appropriately all in an effort to learn the material covered in class.
2. The Biology Textbook is accompanied by a CD. All students are provided with a book and a CD at the beginning of the year. The CD has excellent online resources and should be used as an effective tool for review and reinforcement.
3. Along with the textbook, students should also read the power points, do now assignments, homework, and laboratory assignments pertaining to the topic that is provided to them in class.
4. When preparing for tests: Students should work on Chapter Tests in the textbook and on the CD

Grading System:

Grading is based on a point system. Each assignment will be given a point value. Points will be added and divided by the total number of points one can possibly earn.

The categories used for grading include:

Classwork

Homework

Projects

Lab assignments

Tests/Quizzes

Class Participation