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| **Course Syllabus** **Course Description:** The Biology course is an in depth look at the fundamental characteristics of living organisms. It is designed to promote scientific inquiry and discovery. The students will be introduced to the structure, function, diversity, and evolution of living matter. This is a course with real relevance. It encourages curiosity and provides opportunity for students to work on hands on lab activities and develop relationships through collaboratively learning. Engaging in the study of biological science broadens the picture of the world around us. **Prerequisites:** None**Estimated Completion Time:** 2 segments / 32-36 weeks**Major Topics and Concepts:** **Segment 1:**\* Nature of Science and Biology\* Scientific and Experimental Method\* Measurement\* SI System and Metric Measurement \* Reading Graphs, Diagrams, and Data Analysis and Reporting \* Ecology and Environmental Principles \* Environmental Organization and Organism Relationships \* Cycles in nature \* Greenhouse Effect \* Population and Community Dynamics \* Influence of Man on the Environment \* Introduction to and History of microscope \* Discovery of cells \* Cell Theory \* Prokaryote and Eukaryote cells \* Comparison of plant and animal cells \* Structure of cell membrane \* Cellular Processes \* Cancer \* History of Genetics \* Principles of Genetics and Heredity \* Cell Division and Meiosis (honors) \* Relate asexual reproduction to mitosis, Cell Cycle \* Discovery of DNA and its role in genetics and heredity \* Transcription/Translation (Honors) \* Mutations \* Social Issues in Biology **Segment 2:** \* What are fossils \* Uses of fossils \* Make a fossil \* Microevolution and macroevolution \* Taxonomy \* Need for organization \* Scientific naming \* Viruses are not considered living \* Classification of viruses \* How, when and why we use immunizations \* Introduction to the kingdoms of life \* Taxonomy of bacteria \* Reproduction in bacteria \* Helpful and harmful bacteria \* Viruses vs. bacteria \* Taxonomy of protists \* General characteristics of protists \* Helpful and harmful protists \* Taxonomy of Fungi \* General characteristics of fungi \* Helpful and harmful fungi \* Taxonomy of plants \* Vascular tissue of plants \* Adaptations of plants \* Structure and function in plants \* Importance of plants \* Plant reproduction, pollination \* Fruits, seeds, seed dispersal \* Photosynthesis and cellular respiration \* Plants tropisms \* Taxonomy of animals \* Characteristics of invertebrates \* Characteristics and adaptations of fish \* Characteristics and adaptations of amphibians \* Characteristics and adaptations of reptiles \* Characteristics and adaptations of birds \* Characteristics and adaptations of mammals **Course Assessment and Participation Requirements**: 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 self-checks, practice lessons, multiple choice questions, writing assignments, projects, essays, labs, oral assessments, and discussions. Instructors evaluate progress and provide interventions through the variety of assessments built into a course, as well as through contact with the student in other venues. |