

Mt. San Antonio College

Course Outline*

Course Title:

High School Biology
BCSK HSBIO

Primary Methodology:

Lecture discussion
Laboratory

Establishment of Need:

- X Community/Student Interest
- X Required for the High School Diploma
- X Other: Complies with California K-12 State Content Standards

Course Description:

Biology is a thematic study of the characteristics of the diversity of life from a microscopic to a macroscopic scale. Observations, questioning, and experimentation form the basis of the study of biology. Integral to the understanding of biology is the relationship between structure and function. Students begin by examining matter and energy focusing on the role chemistry plays in life processes and the significance of cells as the basis of all life. The interdependence in nature is studied as students learn about ecology and the role of microorganisms. The importance of science, technology and society is considered within the study of information and heredity. Students also explore evolutionary theories as related to the understanding of life on Earth. As the human body is investigated students will learn the significance of homeostasis.

Course Outline:

- Cell Biology
- Genetics – Meiosis and Fertilization
- Genetics – Mendel's Laws
- Genetics – Molecular Biology
- Ecology
- Evolution – Population Genetics
- Evolution – Speciation
- Physiology
- Investigation and Experimentation

Please note that in order to improve readability, this course outline is formatted differently than on the campus mainframe system. All major components are present in this format.

Course Measurable Objectives:

Students know:

- biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats.
- how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.
- how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death.
- how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.
- a vital part of an ecosystem is the stability of its producers and decomposers.
- at each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid.
- cells are enclosed within semi-permeable membranes that regulate their interaction with their surroundings.
- enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions, and the pH of the surroundings.
- how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure.
- the role of the endoplasmic reticulum and Golgi apparatus in the secretion of proteins.
- usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide.
- the role of the mitochondria in making stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide.
- most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors.
- the central dogma of molecular biology outlines the flow of information from transcription of ribonucleic acid (RNA) in the nucleus to translation of proteins on ribosomes in the cytoplasm.
- meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type.
- only certain cells in a multicellular organism undergo meiosis.
- new combinations of alleles may be generated in a zygote through the fusion of male and female gametes (fertilization).
- the role of chromosomes in determining an individual's sex.
- how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents.
- how to predict the probable outcome of phenotypes in a genetic cross from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive).
- the genetic basis for Mendel's laws of segregation and independent assortment.

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- how to predict the probable mode of inheritance from a pedigree diagram showing phenotypes.
- the general pathway by which ribosomes synthesize proteins, using tRNAs to translate genetic information in mRNA.
- how to apply the genetic coding rules to predict the sequence of amino acids from a sequence of codons in RNA.
- how mutations in the DNA sequence of a gene may or may not affect the expression of the gene or the sequence of amino acids in an encoded protein.
- the general structures and functions of DNA, RNA, and protein.
- how to apply base-pairing rules to explain precise copying of DNA during semiconservative replication and transcription of information from DNA into mRNA.
- how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.
- why natural selection acts on the phenotype rather than the genotype of an organism.
- why alleles that are lethal in a homozygous individual may be carried in a heterozygote and thus maintained in a gene pool.
- new mutations are constantly being generated in a gene pool.
- how natural selection determines the differential survival of groups of organisms.
- a great diversity of species increases the chance that at least some organisms survive major changes in the environment.
- the effects of genetic drift on the diversity of organisms in a population.
- reproductive or geographic isolation affects speciation.
- how to analyze fossil evidence with regard to biological diversity, episodic speciation, and mass extinction.
- how the complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide.
- how feedback loops in the nervous and endocrine systems regulate conditions in the body.
- the functions of the nervous system and the role of neurons in transmitting electrochemical impulses.
- the roles of sensory neurons, interneurons, and motor neurons in sensation, thought, and response.
- the homeostatic role of the kidneys in the removal of nitrogenous wastes and the role of the liver in blood detoxification and glucose balance.
- the role of the skin in providing nonspecific defenses against infection.
- the role of antibodies in the body's response to infection.
- how vaccination protects an individual from infectious diseases.
- there are important differences between bacteria and viruses with respect to their requirements for growth and replication, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections.
- why an individual with a compromised immune system (for example, a person with AIDS) may be unable to fight off and survive infections by microorganisms that are usually benign.

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Primary Method of Course Evaluation:

- X Method #4-Assignments, competency based written and practical tests which demonstrate the students' ability to apply skills, and concepts learned to establish minimum standards established by the instructor.
- X Other: Problem solving assignments, projects, academic prompts, quizzes, and chapter tests to demonstrate minimum competencies.

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Mt. San Antonio College Course Outline*

Course Title:

English 4
BCSKHSENG4

Primary Methodology:

Lecture (May include demonstration and discussion)

Establishment of Need:

- X Community/Student Interest
- X Other: Requirement for High School Diploma
- X Other: Complies with California K-12 State Content Standards

Course Description:

English 4, semesters A/B. Addresses the foundations of literature through British literature using the historical approach. Includes social, political, and intellectual trends connected with the time periods. Anglo-Saxon, Medieval period, English Renaissance, Renaissance drama, the early seventeenth century, the Restoration and the eighteenth century, the Romanic Era, the Victorian Age, contemporary British poetry and prose.

Schedule Description:

English 4, semesters A/B. Social, political and intellectual trends ranging from the Anglo-Saxon Era to the Contemporary Era.

Course Outline:

- Vocabulary and Concept Development
- Comprehension of non-fiction
- Primary and Secondary Sources in Research
- Expository Critique
- Features of Literature
- Narrative Analysis
- Literary Analysis and Criticism
- Writing: Organization and focus
- Writing: Research and Technology
- Writing: Evaluation and Revision
- Writing: Narratives, Responses to Literature, Reflexive Compositions, Historical Investigative Reports, Job Applications and Resumes, Multimedia Presentations.
- Written and Oral English Language Conventions
- Oral Comprehension
- Oral Communication: Organization, Delivery, Analysis, and Evaluation
- Oral Presentations: Reflective, Historical Investigations, Responses to Literature, Multimedia Presentations, Recitations.

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Course Measurable Objectives:

- Apply knowledge of word origins and etymology to determine the meanings of new words and use those words accurately.
- Analyze and critique the features, organizational patterns, arguments, positions advanced, and rhetorical devices of different public documents, informational materials, and grade appropriate text.
- Analyze texts based on clarity of meaning, organization, main ideas, syntax, word choice, and critique the power, validity, and truthfulness of the arguments.
- Analyze the author's implicit and explicit philosophical assumptions and beliefs.
- Analyze various historically and culturally significant works of British literature focusing on characteristics of subgenres, themes, irony, tone, mood, imagery, personification, and style.
- Analyze British Literature by tracing its development over different time periods.
- Compare and contrast the different periods based on themes, styles, and trends.
- Evaluate the philosophical, political, religious, ethical, and social influences of the historic period that shaped the characters, plots, and setting.
- Analyze the way in which authors through the centuries have used archetypes drawn from myth and tradition in literature, film, political speeches, and religious writings.
- Write coherent and focused essays that convey a well-defined perspective and tightly reasoned argument using different elements of discourse, point of view, characterization, rhetorical devices, tone, and style.
- Write ideas and arguments with precise and relevant arguments using suitable research methods and various sources, supporting evidence, quotations and citations, appropriate conventions, and appropriate evaluation and revision techniques.
- Combine the rhetorical strategies of narration, exposition, persuasion, and description to produce short stories, biographies and autobiographies, responses to literature, reflexive compositions, historical investigative reports, job applications and resumes, and multimedia presentations using a variety of different types of media and technology.
- Write extensive research reports analyzing and citing various literary and historical primary and secondary sources; include a bibliography and work cited page.
- Write and speak with a command of standard English conventions: grammar, diction, paragraph and sentences construction, punctuation, spelling, capitalization, and manuscript requirements.
- Deliver focused and coherent presentations that convey clear and distinct perspectives and solid reasoning.
- Formulate judgments about ideas and support those judgments with logical and reasonable evidence.
- Analyze, evaluate, and incorporate media, media genres, media communications, and visual aids into presentations.
- Demonstrate the elements, verbal, non-verbal, and written, for delivering reflexive, historical, responses to literature, recitations, and multimedia presentations based on the interest of different audiences and occasions.

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Primary Method of Course Evaluation:

- X Method #4-Assignments, competency based on written and practical tests which demonstrate the students' ability to apply skills, and concepts learned to establish minimum standards established by the instructor.
- X Other: Academic projects, academic prompts, work samples, checklists, concept mapping, quizzes, tests, individual and group work.

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