



Department of Teaching & Learning
Parent/Student Course Information

Biology
(SC 4310)
Online (SCO 310)
One credit, one year
Grades 9-12

Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.

COURSE DESCRIPTION

Biology is the study of life – the basic characteristics and functions of living organisms and their place in our environment. Laboratory and field investigations are the primary means for developing problem-solving skills and for developing knowledge and understanding of biological concepts. Topics include the history of biology; the cell and cell processes; genetics and heredity; cycles in nature; photosynthesis and respiration; ecology; plants, animals and microorganisms; continuity of life; and the interaction of science, technology and society. Students will take the Standards of Learning (SOL) test for Biology or a substitute test approved by the State Board of Education. Specific dates for the spring SOL test or the summer SOL test will be announced by the school system.

COURSE GOALS

- Develop a foundation of interrelated biological concepts for understanding the characteristics and functions of living things
- Develop investigative skills in order to solve real problems
- Apply the processes of rational thought to make responsible decisions about issues relating from the interactions of science, technology and society
- Explore the application of biological principles in modern life, in careers and in other areas of interest

PREREQUISITE

None

OPTIONS FOR NEXT COURSE

Chemistry (Algebra II prerequisite or co-requisite)

Earth Science

Oceanography (Earth Science prerequisite)

Astronomy (Earth Science prerequisite)

Physics (Algebra II prerequisite or co-requisite)

REQUIRED TEXTBOOK

Biology, Biggs, Hogins, Holliday, Glencoe (2009)

MINIMUM REQUIREMENTS

- Demonstrate knowledge and understanding of all core objectives through laboratory investigations, issue investigations, projects, and oral and/or written tests, quizzes and reports
- Participate in the core laboratory experiences
- Prepare written reports for core laboratory activities and adhere to all safety procedures
- Investigate an issue of local, regional, national or global concern; suggest possible solutions; design a plan of action for solving the problem; and report the results

- Design and conduct at least one experiment; interpret and report the results
- Investigate and report on career opportunities and areas of interest in biology
- Read and share current literature on relevant topics

The Knowledge, Skills and Attitudes that Comprise the Biology Course are Summarized as Follows From the Prescribed Curriculum:

- Demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations.
- Investigate and understand the chemical and biochemical principles essential for life.
- Investigate and understand relationships between cell structure and function.
- Investigate and understand life functions of Archaea, Bacteria and Eukarya.
- Investigate and understand common mechanisms of inheritance and protein synthesis.
- Investigate and understand bases for modern classification systems.
- Investigate and understand how populations change through time.
- Investigate and understand dynamic equilibria within populations, communities and ecosystems.

CORE AREAS FOR LABORATORY EXPERIENCES

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| <ul style="list-style-type: none"> • Safety • Presence of organic molecules • Use of the microscope • Structure of plant and animal cells • Homeostasis • Photosynthesis and respiration • Structure of DNA • Mitosis and meiosis • Basic principles of heredity • Human genetic traits • Organic variation and adaptation • Classification • Characteristics of bacteria | <ul style="list-style-type: none"> • Types and structure of algae • Structure and characteristics of protozoans • Structure and characteristics of fungi • Structure of monocot and dicot seeds • Structure of roots, stems and leaves • Relationship of structure to function in flowers • Investigations to illustrate increasing complexity and development of life (three labs) • Relationships among the biotic and physical components of an ecosystem • Energy transfer in trophic levels • Changes in population density |
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For further information please call (757) 263-1070.

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(Revised August 2017)