



10th Grade Biology

Biology explores life processes. In this course, students will investigate biological systems affecting life processes. Students will apply their knowledge of course concepts by conducting laboratory exercises related to Genetics, Evolution, Ecology and Technology.

In high school, the Missouri Science standards blend core science ideas with scientific and engineering practices and crosscutting concepts to support students in developing useable knowledge to explain ideas across all the science disciplines: life, earth, and physical. These standards include the most fundamental scientific concepts but are intended to leave room for expanded study in upper-level high school courses.

High school students will be expected to use data and evidence as the foundation for developing claims. At the high school level students are expected to engage with major global issues at the interface of science, technology, society and the environment, and to use the analytical and strategic thinking that prior training and increased maturity make possible. They will need to be able to examine, review, and evaluate their own knowledge and ideas and critique those of others.

Over the course of their high school studies, students will become increasingly proficient at posing questions that request relevant empirical evidence; that seek to refine a model, an explanation, or an engineering problem; or that challenge the premise of an argument or the suitability of a design.

The Normandy Schools Collaborative is preparing your student for successful completion of the Biology End of Course Exam by employing the following objectives and performance tasks:

- Investigate biotic and abiotic factors affecting cellular reproduction (growth) or apoptosis (cell death) of plants and animals.
- Employ critical thinking skills to communicate DNA structure, its function and mutations in DNA impacts my genetics (heredity).
- Make and defend a claim based on reliable and valid evidence about the evolution of species.
- Manipulate technology to conduct research and experiments.
- Communicate how technology can advance scientific exploration.

Examples of Your Child's Work at School:

Your child will have experience such as:

- Represent and explain phenomena with multiple types of models.
- Obtain and evaluate evidence of the factors in an ecosystem related to survival and provide an argument for how these and other observed changes affect a species of interest.
- Use to subcellular explanations in describing phenomena in the life sciences.
- Plan experimental or field-research procedures, identifying relevant independent and dependent variables, recognizing that it is not always possible to control variables and that other methods can be used in such cases.
- Explain how claims to knowledge are judged by the scientific community today and articulate the merits and limitations of peer review and the need for independent replication of critical investigations.
- Engage in a critical reading of primary scientific literature (adapted for classroom use) or of media reports of science in order to communicate understanding, ask questions, and discuss the validity and reliability of data, hypotheses, and conclusions using appropriate scientific vocabulary, tables,

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diagrams, graphs and mathematical expressions. (Earth and Space)

How to Help Your Child at Home:

- Encourage participation in science summer camps and post-secondary options.
- If your child expresses an interest in a specific science area, encourage them to talk to their teachers and counselors about internships, college and career opportunities available to them during high school.
- Encourage participation in their school's science organizations and STEM- related competitions.
- Share and critically discuss current science events, articles, and new reports.

21st Century Skills Learned by the End of 10th Grade

- Ability to plan, organize and prioritize work
- Ability to communicate verbally with people within the school and agencies outside the school
- Ability to obtain and process critical information
- Ability to analyze quantitative and qualitative data
- Proficiency with computer software programs to research scientific events
- Ability to create and/or edit scientific reports
- Ability to collaborate with peers
- Ability to produce a claim and justify it with evidence