



SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Science

Course: Genetics and Biotechnology

Standards:

This course is aligned to standards within the following categories of the Pennsylvania Academic Standards for Science and Technology and Engineering Education:

- 3.1 Biological Sciences
- 3.4 Technology and Engineering Education

Course Description:

The K-12 science program within Southern Lehigh School District will foster the development of scientific thinking and logical reasoning. A rigorous curriculum will provide opportunities for students to learn how to ask questions and define problems in order to plan and carry out investigations. Students will be challenged to construct explanations and design solutions through collaborative experiences where they engage in arguments that are based on evidence. Teachers will provide students with hands-on and authentic experiences aligned to a coherent progression of learning.

GENETICS AND BIOTECHNOLOGY offers students a study of heredity and the variable characteristics that arise through gene expression, and their application to industry. In this course, students will develop a greater understanding of the following topics: The Cell Cycle and Cancer, Meiosis and Cytogenetics, Gene Transmission, Genetic Recombination and Mapping, Structure and Function of DNA/RNA, Gene Expression, Gene Regulation, Mutation and Genetic Variation, Construction and Analysis of Clones, Applications of Biotechnology, Population Genetics, Behavioral Genetics, Immunology, and Genetic Diseases.

Prerequisite(s):

- Earn a minimum grade of an A- in Applied Biology, a B in Biology, or a C in Honors Biology; AND
- Earn a minimum grade of a B in Chemistry or a C in Honors Chemistry

Measurable objectives to be attained by students:

Specific objectives for this course are aligned to the Next Generation Science Standards, the Pennsylvania Academic Standards for Science and Technology and Engineering Education, and the Pennsylvania Core Standards for Reading and Writing in Science and the Technical Subjects as outlined in the Scope and Sequence for Genetics and Biotechnology.

Instructional Strategies:

A science program demands the use of a variety of instructional strategies to foster scientific thinking. Below is a list of suggested strategies for high-quality instruction:

- Instructional components outlined in the *Framework for Teaching* by Charlotte Danielson
- Hands-on learning
- Posing questions for investigation
- Cooperative learning and collaboration
- Inquiry, engineering, and design

Estimated Instructional Time:

77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments
- Performance-Based Assessments

Resources:**Student Text Resources:**

Klug, William S., et al. *Concepts of Genetics*. Pearson, 2015.

- Student Text Printed Version

Technology:

District approved supplemental technology

Other Resources:

Teacher created resources

District approved supplemental resources and labs