

Center for Biotechnology and Engineering

Degree Type

Specialty Programs

Biotechnology & Engineering Pathways

The Center for Biotechnology and Engineering is a four-year program of study for students interested in health sciences, engineering, and related fields. This program emphasizes the broad understanding of theory and the application of science, math, and engineering to real-world issues. It provides students with opportunities to pursue authentic and meaningful, hands-on research projects. The Center for Biotechnology and Engineering provides students with a rich environment of integrated humanities and the opportunity to enroll in a variety of Advanced Placement (AP) science courses.

Students pursuing this program are required to complete an Advanced Studies Diploma.

Key elements of the Center for Biotechnology and Engineering include:

- Specialized science courses in Biology, Chemistry, Earth Science, and Physics
- Integrated social studies and language arts classes in grades 9 and 10, designed to help students examine how history, literature, art, architecture, music, and philosophy are influenced by science
- Biotechnology or Engineering strands in grades 11 and 12 to complete the program
- Variety of science, math, and engineering choices that include high-interest classes
- Advanced Placement (AP) courses in Biology, Calculus (AB and BC), Capstone (Seminar and Research) Chemistry, Computer Science, Environmental Science, Physics, and Statistics
- Science and engineering-related extracurricular and co-curricular community activities and partnerships

Program Requirements

To remain in good standing and earn a certificate for the Center for Biotechnology and Engineering Program, students must meet the following requirements:

- Enroll in at least one Center for Biotechnology and Engineering class each year.
- Earn year-end grades of 'C' or better in their core subject areas (language arts, social studies, math, and science)
- Complete at least seven year-long science, math, and engineering classes with a grade of 'C' or better in each. Courses should include:
 - **Biotechnology Pathway**
 - Advanced Biology;
 - Advanced Chemistry;
 - Physics; and
 - At least two Advanced Placement (AP) science classes.
 - **Engineering Pathway**
 - Advanced Biology;
 - Advanced Chemistry;
 - Two Engineering courses; and
 - Four AP science and math courses.
- Complete and document 100 hours that represent an array of extra and co-curricular efforts that support the program goals and relate to their sub-discipline areas of interest.

The following schematic reflects sample frameworks for a Center for Biotechnology and Engineering four-year course of study. Students may also earn college credit for qualifying scores on AP exams (college credit for AP scores varies by college/university and by subject).

Program Type

Transfer

Schools

Biotechnology And Engineering Pathway Sequencing

Required for both pathways:

Title	Credits
Advanced English 9	1
Advanced Biology 1	1
Advanced World History and Geography to 1500	1
Advanced English 10	1
Advanced Chemistry 1	1
Algebra 2	1

Suggested for both pathways:

Title	Credits
Grade 9 Math	1
Grade 9 World Language	1
Health and Physical Education 1	1
Grade 10 Math	1
Grade 10 World Language	1
AP World History	1
Health and Physical Education 1	1

Biotechnology Pathway

Students must complete a total of seven (7) science courses, with two (2) of those courses being at the AP level.

Science Courses:

Title	Credits
Biology 2: Genetics	1
Biology 2: Introduction to DNA Science and Biotechnology	1
Biology 2: Survey of Microbiology and Forensics	1
Chemistry 2: Organic Chemistry	1
Earth Science 1	1
Earth Science 2: Oceanography	1
Earth Science 2: Physical Geology	1
Scientific Illustration	1
Principles of Biomedical Science (PLTW)	1
Engineering Courses (PLTW)	1
AP Science Elective	1

Engineering Pathway

Students must be in good standing in the Biotechnology or Pre-Governor's School program, be enrolled in Algebra II or higher math class, and have completed their first 50 Biotechnology service hours. Students will study six courses that support the accelerated study of math and science while introducing principles of engineering.

Required Courses:

Title	Credits
AP Calculus AB	1
AP Calculus BC	1
AP Physics 1	1
AP Physics 2	1
AP Physics C: Mechanics	1
AP Science Elective	1

One AP Elective:

Title	Credits
AP Seminar	1
AP Computer Science Principles	1
AP Statistics	1

Two Engineering Electives:

Title	Credits
Architectural Drawing and Design	1
Engineering Drawing and Design	1
Technical Drawing and Design	1
Engineering Explorations 1	1
Introduction to Engineering Design (PLTW)	1
Principles of Engineering (PLTW)	1
Digital Electronics (PLTW)	1
Civil Engineering and Architecture (PLTW)	1
Engineering Design & Development (PLTW)	1
Total Credits	13-15