The Biotechnology and Engineering Center

at Osbourn Park

***Program Requirements***

All Biotechnology and Engineering students are required to complete the Advanced Studies Diploma; to include study in 3 or more science disciplines. They must also complete all of the required Biotech and Engineering Science and Humanities courses with a grade of “C” or better. In addition, they must complete a specified amount of Advanced Placement coursework in pathway specific areas of study. Lastly, all Biotech and Engineering students must complete and fully document 100 hours of extra -curricular activities that correspond to the goals and objectives of the Biotechnology and Engineering program.

All Biotechnology and Engineering students will complete the same required coursework during their 9th and 10th grade years. Students will then choose either the Biotechnology Pathway or Engineering Pathway to complete their courses of study for 11th and 12th grades.

**Sample Ninth Grade Schedule Sample Tenth Grade Schedule**

Advanced English 9 (Required) Advanced English 10 (Required)

Advanced World History I (Required) AP World History

Advanced Biology (Required) Advanced Chemistry (Required)

Foreign Language Foreign Language

PE PE

Math Math

One Elective One Elective

**Biotechnology Pathway Requirements**

All students completing the Biotechnology pathway will be required to complete the Advanced Studies Diploma; to include study in three or more science disciplines. They must also complete a total of seven science courses, with two of those courses being at the AP level. Al students must maintain a grade of “C” or better in all Biotechnology Pathway required courses. Finally, students must complete 100 biotechnology service hours by May 1, of their senior year.

***Required Science Courses***

Advanced Biology

Advanced Chemistry

Any Physics class

***AP Science Courses***

Students are required to take at least TWO AP science classes:

AP Biology

AP Chemistry

AP Physics I, AP Physics II, and AP Physics C

AP Environmental Science

AP Capstone Series

AP Psychology

AP Human Geography

***Biotech Pathway Electives***

Earth Science

Geology

PLTW Engineering Courses

Engineering Exploration/Robotics

PLTW Biomedical Science Courses

Chemistry II: Organic Chemistry

Bio II: Introduction to DNA and Biotechnology

Bio II: Forensics and Microbiology

Scientific Illustration

Oceanography

Genetics

***Math Classes***

The math sequence varies depending on the student, but students must complete Algebra II at a minimum.

**Engineering Pathway Requirements**

Students who wish to pursue the Engineering pathway in 11th and 12th grades 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. All students completing the Engineering pathway will be required to work towards the completion of an advanced studies diploma. Students will study six courses that support the accelerated study of math and science while introducing principles of engineering. Students will maintain at least a C average in all of their core courses as well as their engineering course electives.

***Required Courses***

AP Calculus (AB or BC)

AP Physics (I, II, or C)

AP Science Elective (Environmental, Chemistry, Biology)

***Choice of AP Elective***

AP Capstone (Seminar) **OR** AP Statistics **OR** AP Computer Science

***Choice of Two Engineering Electives***

PLTW Intro to Engineering Design

PLTW Principles of Engineering

PLTW Civil Engineering & Architecture

PLTW Digital Electronics

PLTW Engineering Design & Development

Engineering Explorations

Technical Drawing

Architectural Drawing

Engineering Drawing

***Biotech and Engineering Hours***

Biotech & Engineering students are required to complete 100 service hours to receive the Biotechnology Pathway or Engineering Pathway Certificate. The full documentation of at least **100 hours is due by May 1st of the senior year**. They can be service or learning hours that relate to material learned or ideas that are related to a science or engineering class or the program as a whole. Judging a science fair, ecology club, robotics club, science or nature camp, and going to museums are a few examples of things that count in addition to donating time to a science service organizations. **We want to see that students are applying what they learn in school to the real world and that students are making connections between the classroom and their lives outside of the classroom**.

***How to Receive Credit***

Students will submit all hours via the Biotech & Engineering Hours Microsoft Form. Students upload evidence/certificates and answer brief reflection questions for each submission.

**Additional Questions?**

 Contact me at: [wilsonke@pwcs.edu](mailto:wilsonke@pwcs.edu) with any additional questions that were not addressed.