SCIENCE & TECHNOLOGY

BIOLOGY
1 Credit | Grade 9
Advanced 8112
Honors I 8113
Honors 8114
Academic 8115
This course studies the structure and function of living organisms from the molecular, cellular, selected organs, organ systems, and whole organism levels. Special emphasis is placed on the interdependency of organisms and complexities of the patterns of life. Students perform laboratory experiments, engage in group work, create projects, and construct models to expand their knowledge of living systems.

BIOLOGY: PRINCIPLES OF BIOMEDICAL SCIENCE
1 Credit | Grade 9
Advanced 8122
Honors I 8123
Honors 8124
In the introductory course of the PLTW Biomedical Science program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students examine autopsy reports, investigate medical history, examine ecological impacts, and explore medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, biology, medicine, and research processes while allowing them to design their own experiments to solve problems. This course fulfills the Assumption Biology requirement.

CHEMISTRY I
1 Credit | Grade 10
Advanced 8212
Honors I 8213
Honors 8214
Academic 8215
This course examines the classification and properties of matter, atomic structure, molecular structure, chemical bonding, chemical equations, and stoichiometry. Also included are an analysis of the periodic table, graphing techniques, and safe laboratory procedures. Lab experiments are performed.

ADVANCED CHEMISTRY II
1 Credit | Grades 11, 12
Advanced 8502
Prerequisites: Chemistry I, Chemistry teacher recommendation
A continuation of Chemistry I, this course delves into topics not covered during the introductory course such as equilibrium, kinetics, thermodynamics, and beginning organic chemistry. Laboratory skills will be expanded with an emphasis on becoming independent operators in the lab.

AP CHEMISTRY II
1 Credit | Grades 11, 12
AP 8410
Prerequisites: Chemistry teacher recommendation, Physics.
This course builds heavily upon the foundation laid in Advanced Chemistry I and includes advanced topics in inorganic chemistry, atomic structure, periodicity, solubility, equilibrium, redox, kinetics, electrochemistry, and acid-base systems. Preparation for the AP exam is expected, and laboratory attendance outside of regular class time is required.

PHYSICS
1 Credit | Grades 11, 12
Advanced 8422
Honors I 8423
Honors 8424
Prerequisites: Chemistry and math teacher recommendation
This lab course provides a sound background for college science courses. Trigonometry is an integral part of physics, which provides an explanation of various common phenomena such as motion, force, heat, electricity, and light.

AP PHYSICS 1: ALGEBRA BASED
1 Credit | Grades 11, 12
AP 8400
Prerequisites: Chemistry and Math teacher recommendation
This course is the equivalent to a first semester college course in algebra-based physics. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; and mechanical waves and sound. It will also introduce electric circuits.

ADVANCED BIOLOGY II
1 Credit | Grades 11, 12
Advanced 8432
Prerequisites: Biology, Biology teacher recommendation
A continuation of Biology I, this course will both review and delve further into topics covered during the introductory course such as genetics, ecology, cellular biology, biochemistry, evolution, and environmental issues. Laboratory skills will be expanded with an emphasis on becoming independent operators in the lab and research. Field trips, guest speakers, and hands-on activities will supplement the course.

AP BIOLOGY II
1 Credit | Grades 11, 12
AP 8430
Prerequisites: Recommendation of Biology teacher; Anatomy and Physiology recommended; strong chemistry background necessary.
This intensive course includes a detailed study of molecular biology; explores the role of genetics in evolution; and includes a comparative study of microorganisms, plants, animals, physiology, and their impact on the environment. Preparation for the AP exam is expected, and laboratory attendance outside of regular class time is required.

AP ENVIRONMENTAL SCIENCE
1 Credit | Grades 10, 11, 12
AP 8440
Prerequisite: Recommendation of Biology or Chemistry teacher. See Course Levels of Difficulty for further requirements.
This course examines the scientific principles, concepts, and laboratory investigations required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them.

ANATOMY AND PHYSIOLOGY
1 Credit | Grades 11, 12
Advanced 8442
Honors 8444
Prerequisite: Biology teacher recommendation
This lab course investigates the structure and function of the tissues, organs, and systems of the human body. Lab experiments and dissections are required.

ASTRONOMY
½ Credit | Grades 10,11, 12
Honors 8454
This course provides an introductory tour of the nighttime sky and a detailed study of the birth and death of stars. Hands-on activities help supplement an in-depth study of planets and other celestial bodies. Also included are modern explorations in space and future studies in cosmology.

MARINE BIOLOGY
½ Credit | Grades 10, 11, 12
Honors 8464
This course investigates the world's diverse marine ecosystems. Students explore the marvels of marine life and their interdependency with each other and their environment. Marine organisms and oceanography, along with environmental issues, are studied in depth.

FORENSIC SCIENCE I
½ Credit | Grades 11, 12
Advanced 8602
Honors 8604
This semester course provides students with an understanding of the basics of forensic science and what it entails. Students will build their powers of logical thinking, apply previous learning from other science courses, and enhance their reasoning skills. Topics include fingerprint analysis, DNA evidence, and physical and chemical means of identification.

FORENSIC SCIENCE II
½ Credit | Grades 11, 12
Advanced 8702
Prerequisites: Forensic Science I, Forensic Science I teacher's recommendation
This semester course introduces students to the fields of forensic science most closely linked to biology, such as forensic anthropology (examination of human remains), forensic entomology (use of insects in determining postmortem interval), and forensic pathology (use of medical science to examine living victims in an effort to gather evidence).

3D PRINT AND DESIGN
½ Credit | Grades 10, 11, 12
Honors 2314
This is a semester-long introductory course of 3D printing and design. Students will learn about different types of 3D design and slicing programs, how to design and print 3D objects, and see how 3D printed objects are being used in the real world. Students will have the opportunity to design and print several 3D objects.

AP COMPUTER SCIENCE A
1 Credit | Grades 11, 12
AP 2400
Prerequisite: Previous math teacher recommendation
This course introduces students to object-oriented programming and design using the Java programming language. Fundamental topics include the design of solutions to problems, the use of data structures to organize large sets of data, and the development and implementation of algorithms to process data and discover new information. Students will prepare for the AP CS-A exam through which college credit can be earned.

AP COMPUTER SCIENCE PRINCPLES
1 Credit | Grades 11, 12
AP 2300
Prerequisite: Previous math teacher recommedation
This course covers the basic principles of computer science and will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the internet, cybersecurity concerns, and computing impacts. Students will use technology to address real-world problems and build relevant solutions. This course is designed to open a pathway for students to continue studies in college-level STEM and computing courses. Students will prepare for the AP exam and create a digital artifact to submit to earn AP credit. (Source: College Board)

ROBOTICS
½ Credit | Grades 10, 11, 12
Honors 2304
This will be a semester-long introductory course of robotics. Students will learn some of the history behind robotics, the different classifications of robots, some basic programming, and the ability to see robots being used in the real world. Students will have the opportunity to design and construct their own robots and then program them to complete certain tasks.

INTRO TO AVIATION AND AEROSPACE
½ Credit | Grades 9
Honors I 8932
In this introductory course to Assumption's Aviation Program, students explore the areas of flying, aerospace engineering, and unmanned aircraft systems. Students will dive into various sectors of aviation and the elements that make up the aviation and aerospace ecosystem while exploring a variety of career opportunities in aviation and aerospace. Students will gain historical perspective of the aviation industry while also studying modern innovations and developing their own innovative ideas to address real-world challenges facing the industry. Students apply to the Aviation Program and meet during their study block, once every four days. Curriculum is sponsored by the AOPA.

Science & Technology Clubs:
- Environmental Concerns Committee
- Green Thumb Gardening Club
- Future Physicians of America
- Science National Honor Society
- Science Olympiad
- STEAM Club
- Student Technology Leaders
- ACE Mentor Program

FOUNDATION IN FLIGHTS AND AIRCRAFT SYSTEMS
1 Credit | Grade 10
Advanced 8942
In this course students will understand how aircraft are categorized, be able to identify their parts, and learn about aircraft construction techniques and materials. They will gain an in-depth understanding of the forces of flight—lift, weight, thrust, and drag—including how to make key calculations. Furthermore, students will study systems that make manned and unmanned aircraft work as well as the instrumentation powered by those systems including aircraft powerplants and fuel systems, electrical systems, pitot-static systems, and vacuum systems. Lastly, students will learn about the factors that affect aircraft performance and how to determine critical operating data for aircraft. Students apply to the Aviation Program and meet during their study block, once every four days. Curriculum is sponsored by the AOPA.

THE FLYING ENVIRONMENT AND FLIGHT PLANNING
1 Credit | Grade 11
Advanced 8931
Prerequisites: Foundations in Flights and Aircraft Systems
Topics include pre-flight procedures, airspace, radio communications, aviation phraseology, regulations, airport operations, aviation safety, weather, cockpit management, emergency procedures, and remaining topics necessary for students to take the Federal Aviation Administration's Private Pilot Knowledge Test. Students will learn pilot and aircraft qualifications, cross-country flight planning, weight and balance, performance and limitations, human factors, chart use, night operations, navigation systems, and aeronautical decision making. Students will be provided the opportunity to participate in multiple practice examinations. At the end of this course, a school may choose to arrange for students to be signed off to take the Federal Aviation Administration's Private Pilot written exam. Students meet during their study block, once every four days with a mandatory three-day summer kickstart. Curriculum is sponsored by the AOPA.