Science

Course Offerings 2025-2026

Symbol indicates the course will satisfy the house elective requirement
🌎= Global 🎭= Humanities 🏫=ISP 🧮 = SMCS
3 Next Generation Science Standards (NGSS) credits, including life science aligned to the Life Science Maryland Integrated Science Assessment (LS MISA), physical science and one credit in Earth/space science or an NGSS course with the topics of Earth/space science integrated. Courses that satisfy those requirements are listed below.

CORE COURSE SELECTIONS				
Course ID	**Course**	**Grade/House**	**NGSS-Aligned**	**P = Prerequisite C = Corequisite**
SCI2000A SCI2000B	Biology A Biology B	9-12	Yes	
SCI2001A SCI2001B	Honors Biology A Honors Biology B	9-12	Yes	
SCI2049A SCI2049B	Env. Sci. Biology A Env. Sci. Biology B	9/GLO	Yes	
SCI2003A SCI2003B	Chemistry A Chemistry B	10-12	Yes	P - Algebra 1 A/B C - Geometry A/B
SCI2004A SCI2004B	Honors Chemistry A Honors Chemistry B	10-12	Yes	P - Algebra 1 A/B C - Geometry A/B
SCI2005A SCI2005B	Physics A Physics B	11-12	Yes	C - Geometry A/B
SCI2006A SCI2006B	Honors Physics A Honors Physics B	11-12	Yes	C - Geometry A/B
SCI2050A SCI2050B	Env. Sci. 3 Physics A Env. Sci. 3 Physics B	11/GLO	Yes	C - Geometry A/B
SCI2072A SCI2072B	AP Physics 1A AP Physics 1B	10-12	Yes	P - Geometry A/B C- Algebra 2 A/B
SCI2010	Adv. Sci. 1 Physics DP (S1)	9/SMCS	Yes	P - Algebra 1 A/B
SCI2011	Adv. Sci. 2 Chemistry DP (S2)	9/SMCS	Yes	P - Adv. Sci 1 Physics
SOC2012A SOC2012B	Adv. Sci. 3/ESS A Adv. Sci. 3/ESS B	10/SMCS	No	
SOC2013A SOC2013B	Adv. Sci 4/Biology A Adv. Sci 4/Biology B	10/SMCS	Yes	

ELECTIVE COURSE SELECTIONS				
Course ID	**Course**	**Grade**	**NGSS-Aligned**	**P = Prerequisite C = CoRequisite**
SCI2069A SCI2069B	Forensic Science A (AL) Forensic Science B (AL)	11-12	No	P- Biol A/B & Chem A/B **or** P- Physics A/B
SCI2059A SCI2059B	AP Chem A Double Period 🌎🧮 AP Chem B Double Period 🌎🧮	11-12	Yes	P- Honors Chemistry A/B P- Algebra 2 A/B
SCI2041A SCI2041B	AP Bio A Double Period 🌎🧮 AP Bio B Double Period 🌎🧮	11-12	Yes	P - Hon Biology A/B; Hon Chemistry A/B
SCI2046A SCI2046B	AP Environmental Science A AP Environmental Science B	11-12	Yes	P - Biology A/B P - Chemistry A/B
SCI2060A SCI2060B	Anatomy & Physiology A (AL) 🌎🧮 Anatomy & Physiology B (AL) 🌎🧮	11-12	No	P - Biology A/B P - Chemistry A/B
SCI2073A SCI2073B	AP Physics 2A AP Physics 2B	11-12	Yes	P - Physics 1 A/B P - Precalculus A/B
SCI2064A SCI2064B	AP Physics C Mechanics A 🌎🧮 AP Physics C Mechanics B 🌎🧮	11-12	Yes	P - Physics A/B P - Precalculus A/B
SCI2063A SCI2063B	AP Physics C E&M A 🌎🧮 AP Physics C E &M B 🌎🧮	11-12	Yes	P - Hon Physics A/B P - Precalculus A/B
SCI2018	Analytical Chemistry (AL) 🌎🧮 (S1)(This is a one semester course)	11-12	No	P - Adv. Science 2 or P- AP Chemistry
SCI2021	Cellular Physiology (AL) 🌎🧮 (S1)(This is a one semester course)	11-12	No	P - Hon Chemistry A/B P - Hon Biology A/B
SCI2022	Marine Biology (AL) 🌎🧮 (This is a one semester course)	10-12	No	P - Hon Biology A/B C - Hon Chemistry
SCI2043	Wildlife Biology 🌎 (This is a one semester course)	10-12	No	P - Hon Biology A/B
SCI2037	Organic Chemistry (AL) 🌎🧮 (S2)(This is a one semester course)	11-12	No	P - Hon Chem A/B
SCI2017	Thermodynamics (AL) 🌎🧮 (S1)(This is a one semester course)	10-12	No	P - Adv. Science 1 **or** P - Honors or AP Physics
SCI2024	Quantum Physics (AL) 🌎🧮 (S2)(This is a one semester course)	10-12	No	P - Adv. Science 1 **or** P - Honors or AP Physics
SCI2019	Materials Science AL (S2) 🧮 (This is a one semester course)	10-12	No	
SCI2033A	Intro Genetic Analysis A 🌎🧮 (This is a one semester course)	10-12	No	P - Hon Chemistry A/B P - Hon Biology A/B

CORE COURSE SELECTIONS

Biology A/B
SCI2000A/SCI2000B
Grade Levels 9-12
Course Description: This NGSS aligned course emphasizes the patterns, processes, and relationships of living organisms. Students will use observations, experiments, hypotheses, tests, models, theory, and technology to explore how life works. Core ideas include structures and processes in organisms, ecology, heredity, and evolution. There will be multiple opportunities for students to apply these ideas in developing solutions to authentic problem-based scenarios while also exploring career opportunities.

Honors Biology A/B
SCI2001A/SCI2001B
Grade Levels 9-12
Course Description: This NGSS aligned course emphasizes the patterns, processes, and relationships of living organisms. Students will use observations, experiments, hypotheses, tests, models, theory, and technology to explore how life works. Core ideas include structures and processes in organisms, ecology, heredity, and evolution. There will be multiple opportunities for students to apply these ideas in developing solutions to authentic problem-based scenarios while also exploring career opportunities.

Env. Sci. Biology A/B
SCI2049A/SCI2049B
Grade Levels 9 Global
Course Description: Restricted to Poolesville HS: Global Ecology Magnet Biology Students study the same topics and instructional objectives as in the MCPS Honors Biology A curriculum. Additional emphasis is placed on Global Ecological systems, interdisciplinary topics, biological phenomena, and student research. This course is NGSS aligned

Chemistry A/B
Prerequisite: *Algebra 1A/B* ***Corequisite:*** *Geometry A/B*
SCI2003A/SCI2003B
Grade Levels 10-12
Course Description: This NGSS aligned course emphasizes the study of matter through inquiry. Through the use of laboratory investigations, students will explore their world at the atomic level. Using data, evidence, and scientific modelling, students achieve a deeper understanding of changes in matter. Topics of study will include structures and properties of matter, weather and climate, chemical reactions, conservation of mass/energy, and relationships between Earth and human activity.

Honors Chemistry A/B
Prerequisite: *Algebra 1A/B,* ***Corequisite*** *Geometry A/B*
SCI2004A/SCI2004B
Grade Levels 10-12
Course Description: This NGSS aligned course emphasizes the study of matter through inquiry. Through the use of laboratory investigations, students will explore their world at the atomic level. Using data, evidence, and scientific modelling, students achieve a deeper understanding of changes in matter. Topics of study will include structures and properties of matter, weather and climate, chemical reactions, conservation of mass/energy, and relationships between Earth and human activity.

Physics A/B
Corequisite: *Geometry A/B*
SCI2005A/SCI2005B
Grade Levels 10-12
Course Description: This NGSS-aligned course investigates physical laws and theories, relationships of physical phenomena, and the interrelationships of physics to other fields of human endeavor. Topics include traditional physics subjects (Newtonian mechanics: dynamics, momentum, energy; electricity and magnetism; waves) along with related subjects in earth science (plate tectonics; earthquake activity) and astronomy (solar evolution).

Honors Physics A/B
Corequisite: *Geometry A/B*
SCI2006A/SCI2006B
Grade Levels 10-12
Course Description: This NGSS aligned course investigates physical laws and theories, relationships of physical phenomena, and the interrelationships of physics to other fields of human endeavor. Topics include traditional physics subjects (Newtonian mechanics: dynamics, momentum, energy; electricity and magnetism; waves) along with related subjects in earth science (plate tectonics; earthquake activity) and astronomy (solar evolution).

Env. Sci. 3 Physics A/B
Corequisite: *Geometry A/B*
SCI2050A/SCI2050B
Grade Levels 10 Global
Course Description: Restricted to Poolesville HS: Global Ecology Magnet Physics Students study the same topics and instructional objectives as in the MCPS Honors Physics A curriculum. Additional emphasis is placed on interdisciplinary topics, the production and conservation of energy, and student research.

AP Physics 1 A/B
Prerequisite: *Geometry A/B* ***Corequisite:*** *Algebra 2 A/B*
SCI2072A/SCI2072B
Grade Levels 10-12
Course Description: This NGSS aligned course is for highly motivated students with an interest in the physical sciences and builds on concepts covered in Physics with greater detail in content and laboratory investigations. Students explore Newtonian mechanics, including rotational dynamics and angular momentum; work, energy, and power; and mechanical waves and sound. Electric circuits will be introduced.

Adv. Sci 1 Physics DP
Prerequisite: *Algebra 1 A/B*
SCI2010A
Grade Levels 9 SMCS
Course Description: Students study the same topics and instructional objectives as in the MCPS Honors Physics A and B curriculum. Nonlinear systems are emphasized and are solved by numerical rather than analytical methods. Computer science and mathematics are integrated with the use of vectors, spreadsheets, interfaces, and simulators. This course is NGSS aligned.

Adv. Sci 2 Chemistry DP
Prerequisite: *Advanced Science 1, Physics*
SCI2011A
Grade Levels 9 SMCS

Course Description: Students study the same topics and instructional objectives as in the MCPS Honors Chemistry A and B curriculum. Additional emphasis is placed on interdisciplinary topics, the production and conservation of energy, computer and mathematical concepts that are related to modeling, and student research. This course is NGSS aligned.

Adv. Sci 3 ESS A/B
SCI2012A/SCI2012B
Grade Levels 10 SMCS
Course Description: Earth/Space Science (prior-to-secondary) covers basic principles of earth and space science. These may include plate tectonics, rocks and the rock cycle, weather, ocean currents, movements of the Earth, moon, and planets, components of the galaxy and universe, or other topics consistent with state academic standards for earth and space science. This course is not NGSS aligned.

Adv. Sci 4 Biology A/B
SCI2013A/SCI2013B
Grade Levels 10 SMCS
Course Description: Students study the same topics and instructional objectives as in the MCPS Honors Biology A and B curriculum. Additional emphasis is placed on interdisciplinary topics, biological phenomena, and student research. This course is NGSS aligned

ELECTIVE COURSE SELECTIONS

Forensic Science A/B
Prerequisite: *Biology A/B, & Chemistry A/B, or Physics A/B*
SCI2069A/SCI2069B
Grade Levels 11-12
Course Description: Students study forensic science and modern criminal investigation analysis. The course includes selected topics in structure and function of the human body, toxicology, drug and alcohol abuse, serology, terrorist and disaster response and emergency medical procedures, ballistics, DNA analysis, fingerprint interpretation, and explosive incident and arson investigation.

AP Chemistry A/B Double Period
Prerequisite: *Chemistry A/B, Algebra 2 A/B*
SCI2059A/SCI2059B
Grade Levels 11-12
Course Description: AP Chemistry is for highly motivated students with interests in science, technology, and engineering. This course promotes enduring, conceptual understandings through inquiry-based learning, scientific reasoning, and engaging in science practices. Students are prepared to take the AP Chemistry examination at the end of the course. Topics of study will include properties and changes of matter, reaction kinetics, thermodynamics, and intermolecular interactions. This course is NGSS aligned.

AP Biology A/B Double Period
Prerequisite: *Biology A/B, Chemistry A/B*
SCI2041A/SCI2041B
Grade Levels 11-12
Course Description: Biology AP is for highly motivated students with interest in biology. The course emphasizes laboratory investigations and builds on the concepts covered in Biology. Students prepare to take the AP Biology examination at the end of the course. Topics in Biology AP include chemistry of life, cytology, cellular energetics, genetics, diversity of life, evolution, ecology, and behavior. Dissections may occur in this course. See Alternatives to Dissection at the end of the Science section. This course is NGSS aligned.changes of matter, reaction kinetics, thermodynamics, and intermolecular interactions. This course is NGSS aligned.

AP Environmental Science A/B
Prerequisite: *Biology A/B, Chemistry A/B*
SCI2046A/SCI2046B
Grade Levels 11-12
Course Description: AP Environmental Science is for highly motivated students with interest in interdisciplinary science. It builds on concepts covered in Environmental Science, with greater detail in content and laboratory investigations. Students are prepared to take the AP Environmental Science examination. Topics include the interrelationships of the natural world and environmental problems, issues, and solutions. This course is NGSS aligned.

Anatomy & Physiology A/B
Prerequisite: *Biology A/B, Chemistry A/B*
SCI2060A/SCI2060B
Grade Levels 11-12
Course Description: This course is a study of the major systems of the human body. Career opportunities in medical-related fields are examined. The course is intended for advanced-level students. Anatomy and Physiology A topics include cells, tissues, and systems (skeletal, muscular, integumentary, and nervous). Anatomy and Physiology B topics include digestive, respiratory, circulatory, excretory, endocrine, and reproductive systems. This course is not NGSS aligned.

AP Physics 2A/2B
Prerequisite: *Physics A/B, Precalculus A/B*
SCI2073A/SCI2073B
Grade Levels 11-12
Course Description: This NGSS aligned course is for highly motivated students with an interest in the physical sciences and builds on concepts covered in Physics with greater detail in content and laboratory investigations. Students explore fluid mechanics, thermodynamics, electricity and magnetism, optics, and atomic and nuclear physics.

AP Physics C Mechanics A/B
Prerequisite: *Physics A/B, Precalculus A/B*
SCI2064A/SCI2064B
Grade Levels 11-12
Course Description: This course is for highly motivated students with interest in the physical sciences. Students use calculus in problem solving and in derivations as they study Newtonian mechanics, electricity and magnetism. Students are prepared to take the AP Physics Mechanics and the AP Physics Electricity and Magnetism examinations. This course is NGSS assigned.

AP Physics C Electricity/Magnetism A/B
Prerequisite: *Physics A/B, Precalculus A/B*
SCI2063A/SCI2063B
Grade Levels 11-12
Course Description: This course is for highly motivated students with interest in the physical sciences. Students use calculus in problem solving and in derivations as they study electricity and magnetism. Topics include electrostatics, current electricity, magnetism, and electrodynamics. Students are prepared to take the AP Physics Electricity and Magnetism examination. This course is NGSS assigned.

Analytical Chemistry
Prerequisite: *Advanced Science 2 or AP Chemistry*
SCI2018
Grade Levels 11-12

Course Description: Students learn qualitative and quantitative methods of chemical analysis. Sampling techniques, analytical statistics, units of measurement, and errors in chemical analysis are studied. Students learn traditional techniques in wet chemistry in addition to analytical instrumentation, including, but not limited to, gas chromatography, infrared spectroscopy, atomic absorption spectrophotometry, and nuclear resonance spectroscopy. This course is not NGSS aligned.

Cellular Physiology

Prerequisite: *Hon Chemistry and Hon Biology*
SCI2021
Grade Levels 11-12
Course Description: Students study the major topics in molecular and cellular biology, including the cell cycle, cellular macromolecules, the structure and function of cellular organelles, cell communication, cellular energy flow, immunology, and special cell functions. The course includes laboratory investigations in which students use advanced methods of biotechnology to analyze cell structures and explore cellular processes. This course is not NGSS aligned.

Marine Biology

Prerequisite: *Hon Chemistry and Hon Biology*
SCI2021
Grade Levels 11-12
Course Description: Students study basic marine ecological principles and develop an understanding of both the complexity and delicate balance of ocean ecosystems. Relevant science, technology, and societal issues are integrated into the curriculum. Laboratory exercises, field trips, classroom presentations, and literature research are an integral part of the course. This course is not NGSS aligned.

Wildlife Biology

Prerequisite: *Biology A/B*
SCI2021
Grade Levels 11-12
Course Description: This introductory course for students interested in wildlife management or zoology includes field study techniques and information about careers in areas of animal science. Topics include statistical tests, wildlife management habitat usage, foraging preference, behaviors, and body morphology to identify organisms. Soil chemical properties and water quality are used to determine the viability of vertebrates and aquatic macroinvertebrates. This course is not NGSS aligned.

Organic Chemistry

SCI2037
Grade Levels 11-12
Course Description: Organic Chemistry courses involve the study of organic molecules and functional groups Topics covered may include nomenclature bonding molecular structure and reactivity reaction mechanisms and current spectroscopic techniques. This course is not NGSS aligned.

Thermodynamics

Prerequisite: *Advanced Science 1 or Honors or AP Physics*
SCI2017
Grade Levels 11-12
Course Description: Students are introduced to the macroscopic level with topics of heat flow, physical properties as a function of temperature changes, specific heat, calorimetry, latent heats of fusion and vaporization, and heat transport. The microscopic topics of Joule equivalent, the laws of thermodynamics, and kinetic molecular theory also are studied. Students study examples from current research in a variety of disciplines. This course is not NGSS aligned.

Quantum Physics
Prerequisite: *Advanced Science 1 or Honors or AP Physics*
SCI2024
Grade Levels 11-12
Course Description: Modern physical sciences are examined in light of recent discoveries regarding the limits of experience, the atom, and the universe. The course includes a critical analysis of the scientific process, which led to the renunciation of classical physics and the introduction of ideas so foreign to everyday experience as to cause a reassessment of the meaning of physical reality. This course is not NGSS aligned.

Materials Science
SCI2019
Grade Levels 10-12
Course Description: Students study and investigate the properties of materials, including, but not limited to, ceramics and glass, natural and synthetic materials, and metals. Projects vary in depth and scope, ranging from the study of toxic materials to the production of synthetic shoes. This course is not NGSS aligned.

Intro Genetic Analysis A
SCI2033A
Grade Levels 10-12
Course Description: Genetics courses provide students with an understanding of general concepts concerning genes heredity and variation of organisms Course topics typically include chromosomes the structure of DNA and RNA molecules and dominant and recessive inheritance and may also include lethal alleles epistasis and hypostasis and polygenic inheritance. This course is not NGSS-aligned.