Rockville HS – Science Department

Requirements: 3 Credits in Science

Requirements: Three Science credits are required for graduation. One Biology credit (**BC)** and one Physical Science credit (**PSC)** must be included in the three credits. Courses designated as (**SC)** may be used to satisfy the third science credit. Courses designated as **(EL)** can be taken for an elective only. Maryland state colleges and universities require two laboratory sciences for admission. All listed science courses meet the criteria for laboratory science.

Title	Course Code	Course Type	GR	Descriptions
Earth System and Sustainability	A/B	PSC	9-10	This entry-level course will build a science background for English Emerging Learnings (Level I/II). Students will investigate Earth systems (geosphere, atmosphere, biosphere, and hydrosphere) and Earth in space. In each unit, students will explore connections to sustainability issues and potential solutions.
Biology	SCI2000 A/B	BSC	9-10	Required for 9th grade students
Hon Biology	SCI2001 A/B	BSC	9-10	
Chemistry **Prerequisite:** ***Algebra 1*** ***Corequisite:*** ***Geometry***	SCI2003 A/B	PSC	10-12	Required for 10th-grade students unless they are taking AP Chemistry (See Prerequisite for AP Chemistry)
Hon Chemistry **Prerequisite:** ***Algebra 1*** ***Corequisite:*** ***Geometry***	SCI2004 A/B	PSC	10-12	
Astronomy with Physics ***Corequisite:*** ***Geometry***	SCI5085 A/B	PSC	11-12	This NGSS-aligned course emphasizes the world of Astronomy with a focus on physical laws and theories. Students will explore the planets, interstellar objects, energy, and forces of the solar system. Students develop an understanding of physics and earth-space science concepts through the lens of astronomy and build connections to chemistry and life science. Students explore cosmology and the energy and forces of the stars and galaxies of the universe.
Hon Physics **Corequisite:** ***Geometry***	SCI2006 A/B	PSC	11-12	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).

Anatomy and Physiology **Prerequisite** ***Biology and Chemistry***	SCI2060 A/B	EL	11-12	This course is a study of the human body systems and includes dissections of cats, rats, etc. used in a comparative way to parallel the human body. Systems studies focus on the structure and function of each system and conditions/diseases found in each that compromise the healthy body. Anatomy and Physiology A topics include cells, tissues, and systems (skeletal, muscular, integumentary) Anatomy and Physiology B topics include nervous, digestive, respiratory, circulatory, excretory, endocrine, and reproductive systems. Dissection is required.
Forensic Science **Prerequisite** ***Biology and Chemistry or Physics***	SCI2069 A/B	EL	11-12	A hands-on, interactive course using a variety of modalities including computer lab time, crime scene creation, crime museum field trips, observation of dead organisms, and classroom labs. 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 Biology (DP) **Prerequisite** ***Biology and Chemistry***	SCI2041 A/B	SC	11-12	This is a Double Period, College level biology class for highly motivated students that want to dig deeper into the concepts they learned in Biology with a focus on student-designed experimentation. Students prepare to take the Advanced Placement Biology Examination at the end of the course. Topics in Biology AP include chemistry of life, cytology, cellular energetics, genetics, and diversity of life, evolution, ecology, and behavior. For college-bound students who want to major in biological science, and those who hope to test out of Biology to focus on a different major. ***A fee is not required for the AP Exam.***
AP Chemistry (DP) **Prerequisite** ***Hon. Algebra 2 A/B***	SCI2059 A/B	PSC or SC	10-12	This is a Double Period, College level chemistry class for highly motivated students with an interest in physical science. Students prepare to take the Advanced Placement Chemistry Examination at the end of the course. Topics include atomic theory, chemical bonding, phases of matter, solutions, types of reactions, equilibrium, reaction kinetics, and thermodynamics. ***Completion of Algebra II is required for this course.*** ***A fee is required for the AP Exam.***
AP Physics 1 **Prerequisite: Geometry** ***Corequisite: Algebra 2***	SCI2072 A/B	PSC	10-12	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. ***A fee is not required for the AP Exam.***
IB Biology HL **Prerequisite** ***Chemistry***	SCI 2082 A/B	SC	11	IB Biology offers extensive laboratory experiences and emphasizes critical analysis of scientific information; evaluation of biological knowledge for those problems facing humans and synthesis of biological information from different areas of the field. Some topics included are biochemistry, cytology, molecular genetics, and heredity and variation. Students prepare for the higher-level IB Biology exam. This course can only be taken over two years, year 1 as a junior and year 2 as a senior.

IB Biology 2 HL **Prerequisite** ***IB Biology HL***	SCI2083 A/B	SC	12	This course covers the same topics as in IB Biology HL but it is the 2nd Biology course in the IB matrix. Students will complete their internal assessments in this course. ***A fee is required for the IB Exam.***
IB Chemistry SL **Prerequisite** ***Chemistry (H) or AP Chemistry***	SCI 2087 A/B	SC	11-12	This course is a study of the materials of our environment, their properties, and the ways in which they react with each other. Topics of study include stoichiometry, atomic theory, periodicity, bonding, states of matter, energetics, kinetics, equilibrium, acids and bases, oxidation and reduction, organic chemistry, and optional additional studies. This course prepares students for the IB standard-level Chemistry examination. ***A fee is required for the IB Exam.*** ***An IB course student may select this course (see IB Program Document for more information)***
IB Physics HL **Prerequisite:** **Algebra II (H)**	SCI 2096 A/B	SC	11-12	Students investigate physical laws and theories, relationships of physical phenomena, and interrelationships of physics and other fields of human endeavor. Some topics include vector mathematics, kinematics, dynamics, energy, thermodynamics, electricity and magnetism, and nuclear structure and energy. Additional focus is placed on the social and historical perspective in which physical ideas have developed throughout the world. This course can only be taken over two years, year 1 as a junior and year 2 as a senior. ***An IB course student may select this course (see IB Program Document for more information***
IB Physics 2 HL **Prerequisite:** **Precalculus and IB Physics HL**	SCI 2097 A/B	SC	12	The course content includes the study of physical measurement, mechanics, thermal atomic and nuclear physics, oscillations and waves, electric currents, fields and forces, and energy power and climate change. Students will complete their internal assessments in this course. ***A fee is required for the IB Exam.*** ***An IB course student may select this course (see IB Program Document for more information***
IB Environmental Systems SL	SCI 2090 A/B	SC	11-12	Students learn the scientific principles, concepts, and methodologies required to understand the environment, evaluate the relative risks associated with environmental problems, and examine alternative solutions for resolving and/or preventing them. Laboratory and field investigations complement the classroom portion of the program. Students will complete their internal assessments in this course. This course prepares students for the IB standard-level environmental systems exams. ***A fee is required for the IB Exam.*** ***An IB course student may select this course (see IB Program Document for more information)***

Hon = Honors level AP- Advanced Placement IB- International Baccalaureate DP – Double Period

Please contact Mr. Sidney Hankerson, Science Resource Teacher (RT), if you have any questions or need assistance.