

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 **PC** must be included in the three credits. Courses designated as **SC** may be used to satisfy the third science credit. Maryland state colleges and universities require two laboratory sciences for admission. All listed science courses meet the criteria for laboratory science.

Course Code	Title	Course type	GR	Descriptions
3631/3632	Biology A/B	BC	9-10	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.
3621/3622	Hons. Biology A/B	BC	9-10	
3721/3722	Chemistry Prerequisite: Algebra 1 Corequisite: Geometry	PC	10-12	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.
3711/3712	Hons. Chemistry Prerequisite: Algebra 1 Corequisite: Geometry	PC	10-12	
3821/3822	Hons. Physics Corequisite: Geometry	PC	10-12	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).
3891/3892	AP Physics 1 Prerequisite: Geometry	PC	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.
3893/3894	AP Physics 2 Prerequisite: AP Physics 1 Corequisite: Pre-Calculus	PC	12	This NGSS aligned course is for highly motivated students with an interest in the physical sciences and builds on concepts covered in Honors or AP Physics with greater detail in content and laboratory investigations. Students explore fluid mechanics, thermodynamics, electricity and magnetism, optics, and atomic and nuclear physics.
3761/3762	Anatomy and Physiology Prerequisite Biology and Chemistry	BC	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 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,

	SC for only 2020 graduates			muscular, integumentary) Anatomy and Physiology B topics include nervous, digestive, respiratory, circulatory, excretory, endocrine, and reproductive systems. Dissection is required.
3671/3672	Horticulture SC for only 2020 graduates	SC	10-12	Horticultural Science is designed for students interested in mastering fundamental techniques in the care and culture of plants in the home, business, and community. Horticulture includes the care and maintenance of plants both outside in our school gardens and indoor in the greenhouse. Topics include plant anatomy and physiology; growth conditions; plant propagation; control of disease, weeds, and pests; greenhouse management; plant identification; soils; lawns and landscaping. We also market the plants we grow.
3864/3865	Forensic Science Prerequisite Biology and Chemistry or Physics SC for only 2020 graduates	SC	11-12	A hands-on, interactive course using a variety of modalities including: computer lab time, crime scene creation, crime museum field trip, 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.
3651/3652	AP Biology (DP) Prerequisite Biology and Chemistry	BC	11-12	College level biology class for highly motivated students that want to dig deeper into the concepts they learned in Biology with a focus on <u>student-designed</u> 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 a biological science, and those that hope to test out of Biology to focus on a different major.
3751/3752	AP Chemistry (DP) Prerequisite Hon. Algebra 2 A/B	PC	10-12	College level chemistry class for highly motivated students with an interest in the 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.
3625/3626	IB Biology HL A/B Prerequisite Chemistry	BC	11	IB Biology offers extensive laboratory experiences and emphasizes critical analysis of scientific information; evaluation of biological knowledge with respect to those problems facing mankind at present, and synthesis of biological information from different areas of the field. Some topics include are biochemistry, cytology, molecular genetics and heredity and variation. Student 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
3627/3628	IB Biology 2 HL A/B Prerequisite IB Biology HL	BC	12	This course covers the same topics as in IB Biology HL but it is the 2 nd Biology course in the IB matrix.
3746/3747	IB Chemistry A/B Prerequisite Chemistry (H) or AP Chemistry	BC	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.
3844/3845	IB Physics 1 A/B Prerequisite:	PC	11-12	Students investigate physical laws and theories, relationships of physical phenomena, and interrelationships of physics and

	Algebra II (H)			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 prepares students for the IB standard-level Physics examination
3757/3758	IB Environmental Systems 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. This course prepares students for the IB standard-level environmental systems exams.

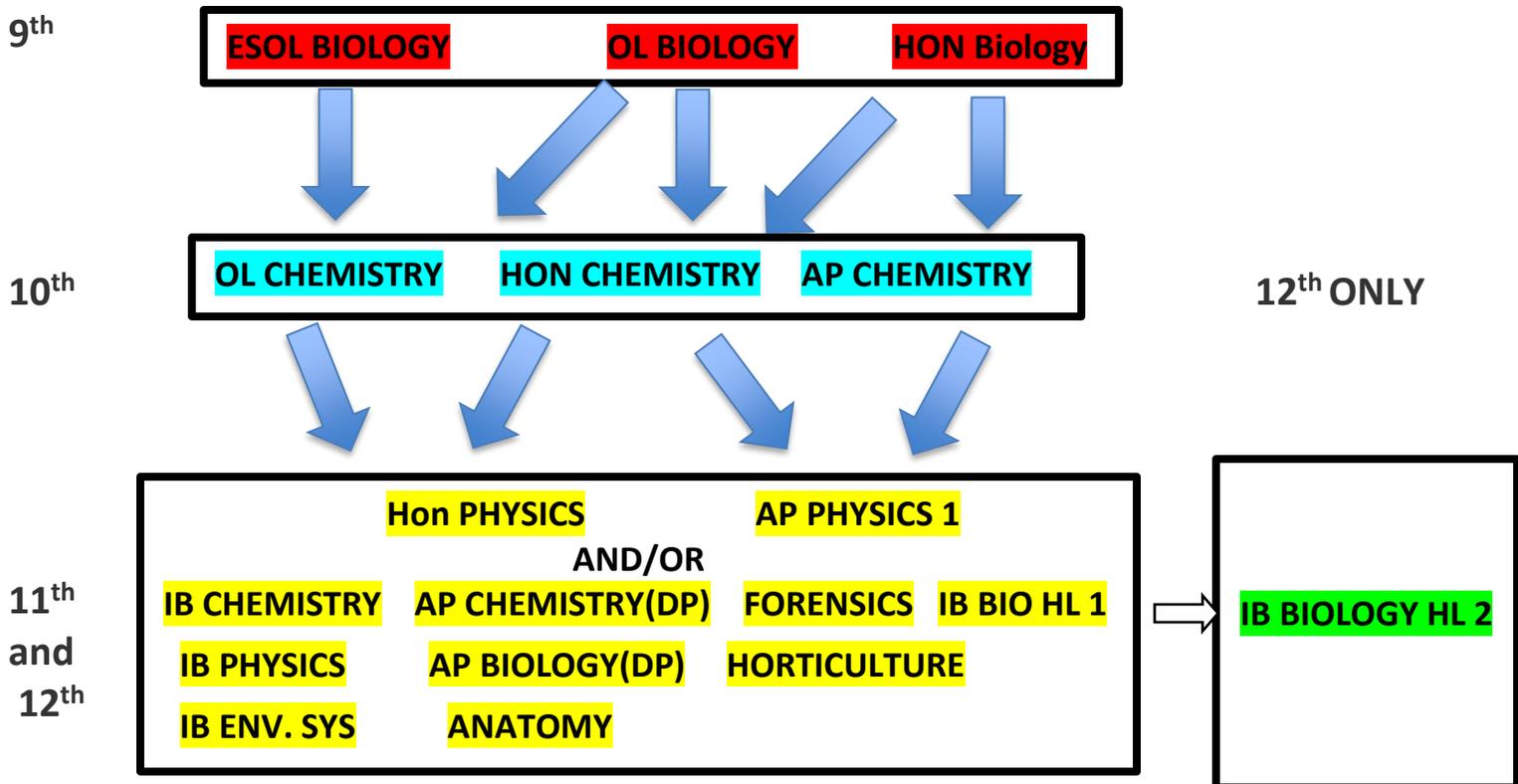
Hons. - Honors level AP- Advance Placement

IB- International Baccalaureate

Co – Corequisite

Rockville HS - Science Sequence Options

2020-2021 Science Courses



For any other options or questions please see Mr. Sidney Hankerson , Resource Teacher (RT) for guidance and information.