

## C. Milton Wright High School Science Courses 2023-2024

**Required for all students:** Completion of one of the Science Sequences. All students from the graduating classes of 2025 onward are required to complete one of the Science Sequences for graduation. **Students are encouraged to take additional science courses as electives.**

### **Science Sequence Courses:**

**Biology or Honors Biology:** Biochemical processes, cells and cell reproduction, genetics, evolution, and ecology, as well as critical thinking skills necessary for success in science. Required for all students to graduate. All incoming 9th graders will take Biology in 9th grade. *Honors Biology is a weighted course and is for students who are highly motivated, self-directed, able to work independently, and enjoy a challenge.*

**Chemistry or Honors Chemistry:** Properties, structure, and composition of matter and the changes it undergoes. Scientific measurement, atoms, electron structure, periodic law, bonding, equations, stoichiometry, phases of matter, and solutions are covered. *Prerequisites: Biology or concurrent enrollment. Completion of Algebra 1 and enrollment in Geometry or greater. Honors Chemistry is weighted. Algebra II is recommended for Honors.*

**Integrated Physics and Chemistry (IPC):** An integrated course combining the essential elements of Physics and Chemistry into a one-year format. See the descriptions of Chemistry and Physics for a basic outline. *Prerequisites: Biology or concurrent enrollment. Completion of Algebra I and enrollment in Geometry or greater.*

**Physics or Honors Physics:** Includes force, motion, work, energy, heat, light, sound, electricity, radioactivity, and magnetism. Recommended for students interested in pursuing future studies in any science, math, engineering, or medical field. *Prerequisites: Biology and Algebra II. Honors Physics is weighted.*

**Earth and Environmental Systems (EES):** Explores the integration of earth science and environmental science. Topics include the universe and its stars, history of Earth, materials and systems, plate tectonics, water, climate, natural resources, natural hazards, human impact, and climate change. *Prerequisites: Biology and IPC.*

### **Science Elective Courses:**

**Anatomy and Physiology:** Structure and function of the human body, organ systems and biochemistry of the human body. Involves some preserved animal dissection. Recommended for any biology or health-related career. *Prerequisites: Biology, completion of Chemistry or if taking Chemistry concurrently. Anatomy and Physiology is a weighted course.*

**Botany/Zoology (alternating years):** Botany: Structure and function of plants, their important role in the biosphere, and the relationship between humans and plants through the ages. Zoology: Structure and function of diverse organisms and topics in animal behavior. Recommended for those pursuing studies in the biological sciences. (Two 1/2 credit courses). *Prerequisite: Biology.*

**Chesapeake Bay Watershed Science (alternating years):** Explores the major current environmental issues through the context of the Chesapeake Bay and will offer several citizen science opportunities. Includes Chesapeake Bay ecology, ecological and biological diversity, water quality, land use, issues and actions. Lab, field, and field trip opportunities will allow hands-on experiences in the Chesapeake Bay Watershed.

*Prerequisite: Biology*

**Forensics:** Engages students in the scientific and analytical investigation of simulated real-life forensic events. Extensive lab investigations explore forensic topics. *Prerequisites: Biology and completion of Chemistry or IPC. Forensics is a weighted course.*

**Marine Science/Astronomy:** In one semester students will study the four branches of marine science: chemical, physical, geologic and biologic. Topics of study include topography, coastlines, ocean water properties, ocean circulation patterns, tidal changes, marine ecosystems, ocean life and human induced environmental changes. The other semester traces the development of astronomical thought from constellations to quasars. Areas explored include the earth-moon systems, the solar systems, stars, galaxies, and cosmology. Both semester courses use laboratory experiences where students make observations, conduct physical experiments, and interpret data gathered by scientists. There are opportunities for field experiences in both courses as well to include planetarium observations. *Prerequisite: Biology, Algebra I*

**Geoengineering (alternating):** This course examines the interaction between extreme geologic phenomena and humans. Topics include the geologic and engineering processes involved in analyzing and reducing hazards related to phenomena such as earthquakes, landslides, volcanoes, and floods. The course culminates with a team project showcasing a variety of science/engineering practices. *Prerequisites: Biology.*

### **AP Science Elective Courses:**

**AP Biology:** Study of molecules and cells, heredity and evolution, and organisms and populations. Equivalent to a general biology college level course. Students may take the AP Biology Exam upon completion. *Prerequisites: Biology and Chemistry or IPC (B or better). (AP weighted).*

**AP Chemistry:** Equivalent to a general chemistry college level course. Students who pass the Chemistry AP exam may be able to pursue second-year work in the chemistry sequence in college, register for courses in fields where general chemistry is a prerequisite, earn credit to fulfill a lab science requirement, and free time for other college courses.

*Prerequisites: Algebra II, Chemistry (Grades of A recommended) (AP weighted).*

**AP Environmental Science:** Applied, interdisciplinary science rooted in analyzing data related to the environment in order to learn how the world works and to assess the extent of human impact on the earth. Equivalent to the college course and may provide college credits upon successful achievement on the AP exam. There will be both lab and field experiences. *Prerequisites: Algebra I, Biology (Grades B or better recommended). (AP weighted).*

**AP Physics C: Calculus Based Mechanics:** This course is designed to be the equivalent of a first-year college physics course for engineering and physics majors. Topics from the previous physics course are explored and the course builds a deeper understanding of physics with more advanced calculations. At the completion of this course, students are eligible to take the College Board Advanced Placement Test towards. (AP Weighted)

*Prerequisites: Biology, Calculus (or taken with Calculus).*

**C. Milton Wright High School offers an extensive list of science courses. Take advantage of this great opportunity to prepare for future college or work-related coursework. Maryland requires 3 credits of science for graduation, however, the CMW Science Department encourages you to take more than three science courses. Colleges look for challenging courses on an applying student's transcript and taking science courses in high school is great preparation for college. The more sciences taken the better!**

*Students interested in joining the CMW Science National Honor Society are reminded that prospective or current members must take at least TWO one-credit science courses in each of their Junior and Senior years and maintain a 3.75 average for all science classes. Only juniors and seniors are eligible for the SNHS.*

**Students may accelerate in either pathway by enrolling in more than one science course per year. Enrollment in science electives is encouraged, but they do not take the place of the science pathway courses. Entering 9th graders may double up in core coursework with the following options and requirements:**

- Biology and AP Environmental Science (completion of Geometry or enrollment in Algebra II or higher).
  - Biology and Chemistry (completion of Algebra I or enrollment in Geometry or higher). Algebra II is strongly recommended for Chemistry.
  - Biology and Integrated Physics and Chemistry (completion of Algebra I or enrollment in Geometry or higher).
- **The Life Science Maryland Integrated Science Assessment (MISA) will be administered upon completion of Biology and is a State of Maryland graduation requirement. The assessment will account for 20% of a student's final grade in Biology.**