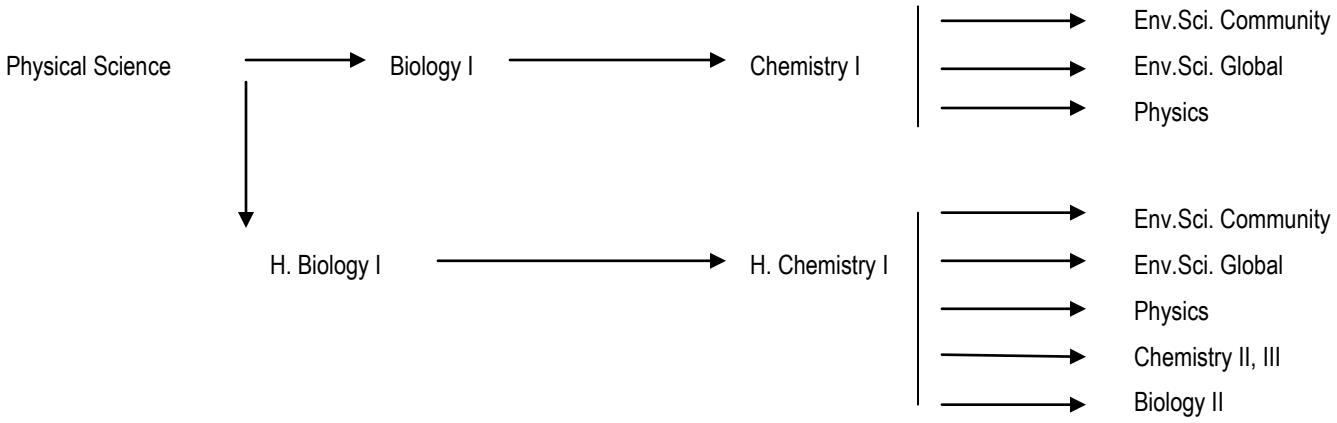
600 SCIENCE

Grade	Course	Title	Credit
9	611	Physical Science	1
10	621	Biology I	1
9,10	622H	Honors Biology I	1
11,12	623	Biology II	1
11,12	631	Chemistry I	1
10,11,12	632H	Honors Chemistry I	1
11,12	641	Physics	1
12	642	Chemistry II	1
12	643	Chemistry III	1
12	650	Env. Sci. Community Approach	½
12	651	Env. Sci. Global Concern	½



611 PHYSICAL SCIENCE 1 credit
(full year) 9
Prerequisites: none

This course is an introduction to chemistry, physics, and earth science and includes development of problem solving skills and laboratory procedures. The focus of the course will be the nature of matter, changes in matter, chemical reactions, motion and energy, waves and wave properties, electricity and magnetism, earth and space, and ecology. Required of all freshman with the exception of those qualifying for Honors Biology.

621 BIOLOGY I 1 credit
(full year) 10
Prerequisites: Integrated Science

Designed for the first year biology student, Biology I covers an array of modern biology topics: molecular and cellular biology, genetics, classification, evolution, ecology, and a comparative survey of the domains and kingdoms of all of the organisms on earth. The course emphasizes skills in scientific problem solving, taxonomy, and development of laboratory skills, including use of the microscope and other laboratory apparatus. This course uses an inquiry-based approach to biology.

622H HONORS BIOLOGY I 1 credit
(full year) 9,10
Prerequisites: **Admission determined by the Science and Math Departments**
Sophomore with an "A" in Algebra I and Integrated Science
Freshman - Admission determined by the Science Department
Successful completion of Algebra I
Must be enrolled in Honor's Geometry or a higher math course

Honors Biology I will be analyzing the organization of life, from the cell to the environment. The major topics being covered will be the scientific method, genetics, botany, anatomy, evolution, taxonomy, animal behavior, and ecology. Emphasis will be placed on developing the scientific mind through critical thinking, laboratory experiments and looking at current scientific research. Projects will be done periodically through the year.

623 BIOLOGY II 1 credit
(full year) 11,12
Prerequisites: **Admission determined by the Science Department**
"B" average or higher in both Honors Biology I and Honors Chemistry I or
"A" average in both Biology 1 and Chemistry 1

This course is designed for students considering a career in the sciences and/or wishing to build upon their Biology I background. This course covers the "study of all life" which include analyzing the creation of a cell as well as the organization of the environment. Basic principles of genetics, botany, microbiology, ethology, ecology, anatomy, and evolution will be discussed. "Current research" will be brought into the classroom through discussion, homework, and projects. Laboratory experiments, dissections, and possible field trips will take place periodically throughout the year.

631 CHEMISTRY I 1 credit
(full year) 11,12
Prerequisites: Algebra I
Biology I

This course utilizes a conceptual approach to the major principles of chemistry. Solving problems will be one of the course objectives. However, the major emphasis will not be on the mathematics of chemistry. Topics covered include measurement, matter-energy-change, atomic theory, bonding, chemical shorthand, descriptive chemistry, nuclear chemistry, organic chemistry, and qualitative analysis. This course is designed to provide those students planning careers in traditionally non-science majors such as business, social sciences, arts and the humanities with a fundamental understanding of chemistry and its connection to other sciences and technologies. This course meets college requirements for a laboratory science and will serve as preparation for college basic science courses for non-science majors.

632H HONORS CHEMISTRY I 1 credit
(full year) 10,11,12
Prerequisites: **Admission determined by the Science and Math Departments**
Enrolled in Algebra II/Trig. or higher level math course
Honors Biology I

This course follows a logical, sequential development of major chemical principles, beginning with the "mechanics" of chemistry, the theoretical development of the atom and the structure of matter as it relates to the periodic table. Other topics include the mole concept, stoichiometry, equilibrium, reaction rates, acids and bases, and oxidation and reduction. Some descriptive and analytical chemistry is included. Extensive application of mathematical skills in problem solving and laboratory work is integral to this course. This course meets college entrance requirements and is intended for science or math majors.

641 PHYSICS 1 credit
(full year) 11,12
Prerequisites: **Admission determined by the Science Department**
Successful completion of Algebra II/Trig or higher
Chemistry I or Honor's Chemistry

Physics is a college level course that investigates the macroscopic world in which we live. This course is mathematic intensive and emphasizes problem solving involving the fundamental concepts of physics. The topics covered include kinematics, dynamics, forces, gravitation, momentum, states of matter and energy, wave motion, optics, sound, electricity and magnetism, nuclear and astrophysics.

642 CHEMISTRY II 1 credit
(full year) 12
Prerequisites: **Admission determined by the Science Department**
Enrolled in Calculus or Pre-Calculus
Honors Biology
Honors Chemistry I - "B" average or higher
Successful completion of Physics, or concurrent enrollment in Physics, or
student may petition the Science Chair for admission to the course

Chemistry II is designed for those students planning to major in a science at the college level. The student should also have a strong interest in a science or a science-related career. Topics covered in Chemistry II include atoms, molecules, and ions, stoichiometry-calculatiions with formulas and equations, aqueous reactions and solution stoichiometry, thermochemistry, electronic structure of atoms, periodic properties of elements, chemical bonding, molecular geometry, and gases.

643 CHEMISTRY III 1 credit
(full year – independent study) 12
Prerequisites: **Admission determined by the Science Department**
Successful completion of Chemistry II or student may petition the
science chair for admission to the course.

Chemistry III is designed for those students planning to major in a science at the college level. The student should also have a strong interest in a science or a science-related career. Topics covered in Chemistry III include chemical kinetics and thermodynamics, equilibrium, acids, bases, and salts, acid-base reactions, electrochemistry, organic chemistry, and nuclear chemistry.

650 ENVIRONMENTAL SCIENCE a Community Approach ½ credit
(1st semester) 12
Prerequisites: None

Environmental Science introduces ecological topics ranging from ecosystems to individual organisms. Some of the topics introduced in the course include the nature of ecology as a science, the individual and its physical environment, population distribution and growth, biodiversity, and community dynamics. Environmental concepts will be explained using examples from diverse habitats and across a broad spectrum of taxa (bacteria, fungi, animals and plants). Special topics include recent advances in environmental studies as well and specific studies of environmental issues in our local community. Students will participate in the Ohio Energy Project.

651 ENVIRONMENTAL SCIENCE a Global Concern ½ credit
(2nd semester) 12
Prerequisites: None

Explores Earth's natural systems, as well as how human activity affects the environment; students will apply the scientific method to investigate natural flows of chemical, water and energy in terrestrial, aquatic, and atmospheric systems, and how humans impact these natural flows and systems. Students will participate in the Ohio Energy Project.