

# SCIENCE

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The science curriculum is designed to meet the needs of all students. The curriculum is structured into two distinct sequences based upon student ability and electives for any student. Any six semesters of science, successfully completed, may be counted to fulfill the three-year requirement for graduation. The Science Department believes it is in the best interest of the student to experience two disciplines of science within his/her three-year science requirement. By completing both a life science and a physical science course, a student can have a better appreciation of the scope of science, be more prepared for specific content on standardized tests, and have a solid foundation for further science exploration.

Because Honors and Advanced Placement (AP) course work is accelerated and more sophisticated, upper level work of high quality in a compacted time frame is demanded of students. The Science Department has developed recommendations for student success. These criteria are indicators of performance levels or standards for the honors or AP courses and are available from the Science Department.

## SCIENCE COURSE LISTINGS

### COLLEGE PREP COURSES

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COURSE#	TITLE	LEVEL	PREREQUISITE
SCI1005	Biology	Yr. 9	None
SCI2006	Earth Science	Yr. 10-12	None
SCI2016	Horticulture	Yr. 10 -12	Biology or Instructor approval
SCI3000	Greenhouse Mgmt. & Floral Design	Yr. 11-12	Horticulture
SCI2001	Astronomy: (Exploring the Universe)	Sem. 10 -12	None
SCI2017	Chemistry/Physics	Yr. 10-12	None
SCI2018	Chemistry	Yr. 10 -12	Biology and concurrent enrollment in Geometry
SCI2019	Physics	Yr. 11-12	Biology, Chemistry, Algebra and Geometry
SCI2002	Cosmic Journey	Yr. 10 -12	Geometry or taken concurrently w/teacher permission
SCI2003	Genetics (Human Genetics, Bioethics & Biotechnology)	Yr. 10 -12	Biology and Chemistry or taken concurrently with Instructor approval
SCI2004	Anatomy & Physiology	Yr. 10 -12	Biology and Chemistry or taken concurrently with Instructor approval

SCIENCE COURSE LISTINGS (CONT'D)

ACCELERATED & COLLEGE PREP COURSES

COURSE#	TITLE	LEVEL	PREREQUISITE
SCI1005H	Honors Biology	Yr. 9	Placement
SCI1005A	*AP Biology	Yr. 10 -12	Biology, Chemistry, or Instructor approval
SCI2018H	Honors Chemistry	Yr. 10 -11	Biology and Geometry
SCI2018A	*AP Chemistry	Yr. 11-12	Biology, Chemistry, Algebra 2/Trig
SCI2019H	Honors Physics	Yr. 11-12	Biology, Chemistry, Algebra 2/Trig
SCI2014A	AP Environmental Science	Yr. 10-12	Biology, Chemistry, Algebra 2/Trig
SCI2019A	AP Physics	Yr. 11-12	Physics & AP Calculus (AB or BC) concurrently

\*This course meets for 1½ periods.

DUAL CREDIT WITH COLLEGE OF DUPAGE

Students enrolled in the following courses may apply to earn dual credit with COD. High school students who wish to take the course listed below for dual credit will receive college credit and a COD transcript regardless of whether or not they continue at College of DuPage. These credits may be transferable to other institutions. All dual credit opportunities are based on an agreement between IPSD and COD. To qualify for dual credit, students must complete appropriate applications and placement testing as required by COD. Freshmen are not eligible for dual credit.

COURSE COMPLETED AT MVHS, NVHS. WVHS	CREDIT AT COD
Anatomy and Physiology: Course SCI2004D	Anatomy and Physiology 1500: Survey of Human Anatomy and Physiology
Horticulture: Course SCI2016D	Horticulture 1100: Introduction to Horticulture (3 hrs. credit)

## SCIENCE DESCRIPTIONS

*All Science courses are year-long except Astronomy.*

### SC1005 BIOLOGY *Grade 9.*

This laboratory is the traditional biology course. It is organized and conducted to provide students with a sound and comprehensive understanding of biology. Strong emphasis is given to understanding fundamental biological processes and how they apply to our lives.

### SC1005H HONORS BIOLOGY *Grade 9.*

The laboratory experience emphasizes biology as an investigative process based on inquiry. Creating hypotheses by studying the facts and devising an explanation for them is a crucial part of this curriculum. Teaching strategies enable students to learn science through a natural development process. Beginning with exploration and moving through invention to application, students build solid foundations in biological concepts and theories while developing higher-order thinking skills.

SCI2006 EARTH SCIENCE *Grade 10-12. Prerequisite is one year of science or instructor approval.*

This course represents an overview of the Earth. It engages each student in a laboratory study of topics in geology, including rocks and minerals, earthquakes and volcanoes, streams and glaciers. The topics of weather and climate are explored as well.

SCI2016 HORTICULTURE *Grade 10-12. Prerequisite is Biology.*

This course places emphasis on botany, plant parts and processes, propagation, careers, and plant identification. Students are introduced to greenhouse management, landscape, and floral design through the greenhouse and floral lab. This college-preparatory course is geared toward students interested in majoring in biological sciences or horticulture. This course does not meet NCAA eligibility requirements.

SCI3000 GREENHOUSE MANAGEMENT & FLORAL DESIGN *Grade 11-12. Prerequisite is Horticulture.*

This course stresses greenhouse management, plant production, and floral design. Specific topics include but are not limited to botany, plant identification, propagation, and careers. Extensive use of lab facilities and greenhouse will be used to demonstrate concepts and supply students with first-hand knowledge of plant growth and management practices. The students will create a greenhouse design and management project. This course does not meet NCAA eligibility requirements.

SCI2017 CHEMISTRY/PHYSICS *Grade 10-12. Prerequisite is one year of science.*

This course provides students with a solid foundation of physical science and the laboratory techniques used to test and support such knowledge. One semester is an introduction to the principles of chemistry; the other is an introduction to the principles of physics.

SCI2018 CHEMISTRY *Grade 10-12. Prerequisite is Biology and concurrent enrollment in Geometry.*

This course introduces the college-bound student to basic chemistry principles through lecture, laboratory, and group work. The laboratory experience emphasizes the discovery of key concepts through the analysis of student-generated data.

SCI2018H HONORS CHEMISTRY *Grade 10-12. Prerequisites are Biology & Geometry. Weighted grade.*

This course introduces students to the fundamental concepts and theories of chemistry. This laboratory course emphasizes problem-solving, analysis, critical thinking, and experimentation.

SCI2019 PHYSICS *Grade 11-12. Prerequisites are Biology, Chemistry, Algebra, and Geometry.*

Physics presents a practical overview of general classic and modern physics topics. In this introductory course, the emphasis will be upon laboratory investigations leading to a firm grasp of conservation of momentum, energy, and charge. The math requirement entails proficient use of algebra and geometry.

SCI2019H HONORS PHYSICS *Grade 10-12. Prerequisites are Biology, Chemistry, and Algebra 2/Trig. - Weighted grade.*

This course introduces students to the basic concepts and theories of physics. The pace and scope of this course are designed for students with a sound understanding of algebra, geometry, and trigonometry. This course emphasizes problem-solving and experimentation. Honors Pre-calculus is also strongly recommended.

SCI2001 ASTRONOMY: EXPLORING THE UNIVERSE *Grade 10-12. Semester course.*

This is an introductory course that focuses on observational astronomy. The planetarium may be used in order for students to comprehend observational techniques and coordinates that help them observe the heavens. Seasonal stars and constellations, their mythologies, and constellation creation are the main focuses of this class.

SCI2002 COSMIC JOURNEY *Grade 10-12. Prerequisite is Geometry (may be taken concurrently).*

Students begin their journey with the Big Bang and explore the universe through the eyes of Galileo, Copernicus, Kepler, Newton, and other great minds. On the journey into present day, students study the extinction of dinosaurs, the solar system, galaxies, stars, black holes, and the laws governing the universe. Many laboratory experiences and group projects, along with trips to the planetarium, are used to reinforce astronomical concepts. Each student will also construct a refracting telescope. A field trip to the Museum of Science and Industry to explore the Henry Crown Space Center and Omnimax Theatre is included.

SCI2003 HUMAN GENETICS, BIOETHICS, AND BIOTECHNOLOGY *Grade 10-12. Prerequisites are Biology and Chemistry (may be taken concurrently).*

This college level course introduces students to the fundamental concepts of genetics. Students are acquainted with not only classical patterns of inheritance but also present day findings in molecular genetics. Laboratory experiments provide active participation in demonstrating and applying the theories of genetics and biotechnology. Present day bioethics issues in biotechnology are addressed.

SCI2004 ANATOMY AND PHYSIOLOGY *Grade 10-12. Prerequisite is Chemistry (may be taken concurrently with Instructor approval).*

This college level course introduces students to the fundamental concepts of human anatomy and physiology. Particular emphasis is placed on animal dissections to help the students learn how the human body functions. Students may apply to earn dual credit through COD.

SCI1005A AP BIOLOGY *Grade 10-12. Prerequisites are Biology, Chemistry or Instructor approval. Weighted grade.*

This course is a college-level laboratory course dealing with advanced topics in Biology. There are twelve mandatory laboratory experiences dealing with such topics as diffusion, osmosis, enzyme catalysis, molecular biology, and genetics. Students who successfully complete this course and the AP Biology examination may receive college credit and/or higher placement in college.

SCI2018A AP CHEMISTRY *Grade 11-12. Prerequisites are Chemistry and Algebra 2/ Trig. Weighted grade.*

Advanced Chemistry is a college level laboratory course dealing with advanced topics in inorganic chemistry. Students may receive college credit in Advanced Chemistry by qualifying on an examination administered by the College Entrance Examination Board at the conclusion of the course. This course is weighted and emphasizes problem solving and lab experience.