

Biology
Chemistry
Physics
Physical Science
Astronomy
Environmental Science
Food Science
Geology
Human Anatomy & Physiology
Organic Chemistry
AP Biology
AP Chemistry
AP Physics C
Career Internship Program

Science

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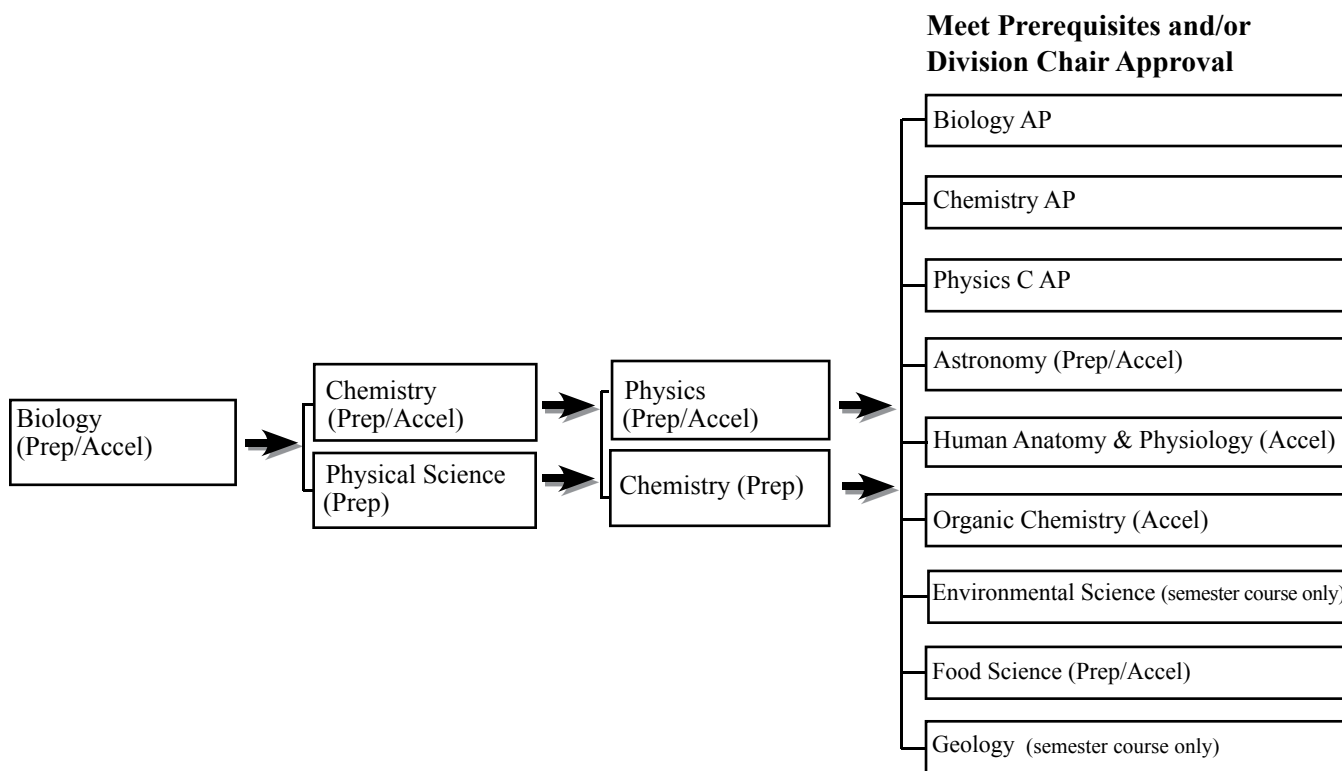
Science Department Philosophy

All high school students need a broad background in science. To attain a broad background, all students should complete at least three years of science including one course each in biology, chemistry, and physics. If these three core courses are completed by the end of junior year, students have maximized their opportunities to do well on standardized tests, such as ACT and PSAE, and will be prepared for further study of science during their senior year.

An important component of all science courses is laboratory work. Lab work gives students direct contact with the material studied in the course, develops lab skills, increases a student's understanding of how science actually works, and helps the student develop analysis, interpretation, and synthesizing skills.

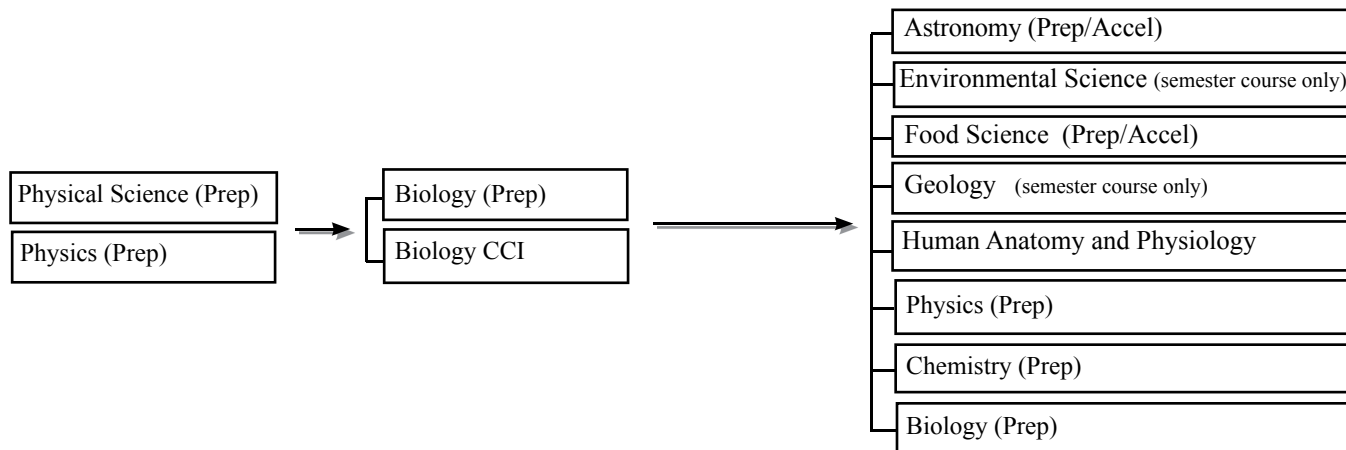
Science Sequences

There are many science sequences that students may select because of their interests and career plans. The sequences shown below are intended to provide a solid background in science and not restrict students in their choices. Other sequences are possible when students, with input from teachers, counselors and parents, choose different course levels for biology, chemistry, and/or physics.



* see prerequisites for course selections

11th and 12th Grade Options if student meets prerequisites and/or Division Chair Approval



Other Electives North Campus 11-12
 • Inter-Disciplinary Workshop (IDW) (Grade 11 only)

General Information

- Two credits in science are required for graduation. However, courses in biology, chemistry, and physics should be included in every student’s Four Year Academic Plan to provide a balanced preparation for future vocational and/or educational goals.
- Most colleges require at least two credits of a laboratory science for admission and some (especially Illinois universities) require three. Many colleges and universities suggest a three or four year sequence for students entering engineering, medicine and the health services, home economics, and computer sciences.
- Most colleges recommend both natural and physical science experience.

Science Placement into Academic Ability Levels

The Division Chair recommends placement for incoming freshmen based upon an integrated analysis of the following performance indicators:

1. standardized test scores on the EXPLORE test
2. information from the eighth grade teachers

Science and Advanced Placement (AP)

The Science Department offers preparation for AP examinations in three areas.

1. **Biology AP**
 Biology AP is the suggested course to prepare for the AP examination in biology or related examinations given by various colleges and universities. As the course description indicates, it is equivalent to two semesters of college biology.
2. **Chemistry AP**
 The Chemistry AP course is the equivalent of two semesters of college chemistry. Chemistry AP uses the College Board syllabus to prepare students for the AP examination in chemistry.
3. **Physics C AP**
 Physics C AP is a college level physics course for those students whose post-high school plans call for a major in engineering science, the physical sciences, astronomy, medicine, or any related technical field. Physics C AP is a calculus-based university physics course and covers all of the material traditionally offered in the introductory course of colleges of engineering science and other related fields. As a result, of the Physics C AP course students will be prepared for both Physics C AP examinations: Electricity and Magnetism, and Mechanics.

- **Independent Study** Under specific conditions as outlined on p. 25 of the **Guide**, students may make application for Independent Study. In all cases, students must secure parent, teacher, counselor, divisional, and building administration approval. Independent Study may not be taken as an 8th semester/annual course.

Astronomy

Credit: 1	Level: III, IV		
Grade Offered: 11, 12	Level III	Annual	SN5311 SN5312
	Level IV	Annual	SN7311 SN7312

Prerequisite: Completion of biology, chemistry, and physics **or** concurrent enrollment in one of the previously listed classes **and** completion of the other two.

Astronomy is the oldest of all sciences. It began as an attempt by people to understand the world around them. Even today, people wonder what lies beyond our planet. Astronomy is the laboratory study of the night sky, our solar system, and objects which make up the universe. The study of astronomy and space science requires knowledge of biology, chemistry, and physics. In this course, techniques used by amateur and professional astronomers will be incorporated, students will learn to identify objects in the night sky and make predictions of celestial events such as eclipses. The origin, evolution, and future of our solar system, galaxy, and universe will be studied, and the existence of black holes and other cosmic oddities will be discussed. Students will learn about the history and future of space exploration, and how the science of astronomy, however old, is always changing.

Biology (Prep)

Credit: 1	Level: III		
Grade Offered: 9, 10	Annual		SN5116 SN5117
11, 12	Annual		SN5111 SN5112

Prerequisite: None

This college preparatory course focuses on an understanding of life and major life processes. Emphasis is placed upon unifying principles and concepts applicable to all life forms and the adaptations of diverse organisms to carry out fundamental functions. The objectives of the course are met through laboratory work, demonstration, lecture, homework, and visual aids. This preparatory course is planned for students who have attained basic

skills and who are working toward higher competencies. This course moves at a pace that allows frequent review and checks for understanding.

Biology Cross Curricular Integration (CCI) (Prep)

Credit: 1	Level: III		
Grade Offered: 10	Annual		SN5226 SN5227

Prerequisite: Recommendation from Humanities or by English or Math/Science chair approval

Biology CCI is one course of a two hour block that combines biology, language arts and reading. Students will study biology in a project-based setting with a focus on an understanding of life and major life processes. The objectives of this course are met through traditional science methods such as laboratory work, demonstration, lecture, homework and visual aids combined with the interpersonal communication skills, reading strategies and writing competencies of a language arts classroom. This course may only be taken in conjunction with English Cross Curricular Integration (CCI).

Biology (Accel)

Credit: 1	Level: IV		
Grade Offered: 9, 10	Annual		SN7116 SN7117

Prerequisite: None

This college preparatory course focuses on an understanding of life and major life processes. Emphasis is placed upon unifying principles and concepts applicable to all life forms, and the adaptations of diverse organisms to carry out fundamental functions. The objectives of the course are met through laboratory work, demonstration, lecture, homework, and visual aids. Biology (Accel) explores biological topics in greater depth than does Biology (Prep) and provides greater opportunity for involvement in AP course offerings at the junior/senior level. This course is planned for students with above average reading comprehension and writing skills.

- **Independent Study** Under specific conditions as outlined on p. 25 of the **Guide**, students may make application for Independent Study. In all cases, students must secure parent, teacher, counselor, divisional, and building administration approval. Independent Study may not be taken as an 8th semester/annual course.

Biology AP

Credit: 1	Level: V
Grade Offered: 11, 12	Annual SN8311 SN8312
Prerequisite: Biology (Accel) with a grade of B or better or Biology (Prep) with grade of A, and approval of division chair.	
Recommended: Chemistry and Physics	

Biology AP is a second course in biology offered to those students who have successfully completed the first level course. Taught at the college level, it is considered to be the equivalent of two semesters of college biology. The content is laboratory oriented. Areas covered in the course are plant growth and development, comparative vertebrate anatomy, animal physiology, genetics, microbiology, embryology, and a review of the basic principles of biology. Animals dissected for study in comparative vertebrate anatomy include the Amphioxus and one mammal (cat, rabbit, or mink). Human physiology is also an important part of the course. The program prepares students for the AP examination in Biology or comparable examinations.

Chemistry (Prep)

Credit: 1	Level: III
Grade Offered: 10	Annual SN5616 SN5617
11, 12	Annual SN5611 SN5612
Prerequisite: Completion of Algebra Prep	

Chemistry is the study of composition and structure of matter and the changes that matter undergoes, and the energy associated with those changes. Principles of chemistry as well as applications of chemistry are emphasized. Chemical concepts are developed through the use of mathematical relationships and are reinforced through laboratory activities.

Chemistry (Accel)

Credit: 1	Level: IV
Grade Offered: 10	Annual SN7216 SN7217
11, 12	Annual SN7211 SN7212
Prerequisite: B or better in Algebra (Accel) or a grade of B or better in Algebra I (Prep) w/ math teacher recommendation	
Recommended: Biology	

Chemistry is the study of the composition and structure of matter, the changes matter undergoes, and the energy associated with those changes. Chemistry concepts are reinforced through laboratory activities. This course moves at a faster pace than Chemistry (Prep), while covering a greater range of topics to a greater depth. Mathematics is an integral part of the course. Out of class reading and comprehension are key to success in this course, and students will be expected to independently acquire information.

Chemistry AP

Credit: 1	Level: V
Grade Offered: 11, 12	Annual SN8211 SN8212
Prerequisite: Chemistry (Accel) with grade of B or better, and Physics	

Chemistry AP is intended to provide a college level course in chemistry for interested and capable students who are considering careers in technical fields such as chemistry, chemical engineering, general engineering, and medicine, or for careers in areas where a knowledge of chemistry will be required. Those who complete the course may take the AP examination in Chemistry.

This course is equivalent to two semesters of college chemistry. Topics include electronic and atomic structure, stoichiometry, reactions, thermochemistry, periodicity, bonding, intermolecular forces, kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry.

Science Classes

When choosing Annual Courses, you will need the first and second semester codes.

Freshman Courses

SN0005	Science TBA (No Test)
SN5116/7	Biology Prep
SN7116/7	Biology Accel
SN4916/7	Physics Prep
SN4516/7	Physical Science Prep

Sophomore Courses

Annual

SN5116/7	Biology Prep
SN5226/7	Biology CCI
SN7116/7	Biology Accel
SN5616/7	Chemistry Prep
SN7216/7	Chemistry Accel
SN4916/7	Physics Prep
SN4516/7	Physical Science Prep

Junior and Senior Courses

Annual

SN5311/2	Astronomy Prep
SN7311/2	Astronomy Accel
SN5111/2	Biology Prep
SN8311/2	Biology AP
SN5611/2	Chemistry Prep
SN7211/2	Chemistry Accel
SN8211/2	Chemistry AP
SN9211/2	Food Science Prep
SN9311/2	Food Science Accel
SN9511/2	Human Anatomy & Physiology
SN5811/2	Intro to Organic Chemistry Accel
SN4911/2	Physics Prep
SN7411/2	Physics Accel
SC8411/2	Physics AP - C

Fall Only

SN6011	Environmental Science
SN6121	Geology

Spring Only

SN6012	Environmental Science
SN6122	Geology

Fall or Spring

SN5551/2	Career Internship
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Science Department Standards

As a result of their core science courses (biology, chemistry, physics) students will be able to know and apply...

1. the concepts, principles, and processes of scientific inquiry to investigate questions, conduct experiments, and solve problems.
2. concepts that explain how living things function, change, and adapt.
3. concepts that describe how living things interact with each other and with their environment.
4. concepts that describe properties of matter and energy and the interactions between them.
5. concepts that describe force and motion and the principles that explain them.
6. concepts that describe the features and processes of the Earth and its resources.
7. concepts that explain composition and structure of the universe and Earth's place in it.
8. the accepted practices of science.

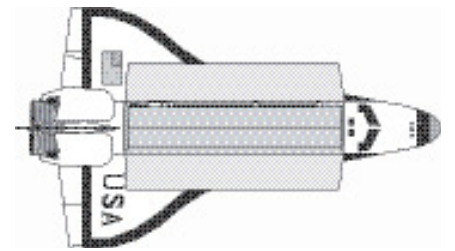


Did You Know?

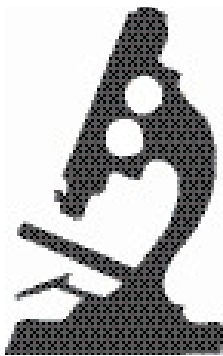
20 High-Paying Science Careers for the Next Decade

- Surgeon
- Anesthesiologist
- Internist
- Dentist
- Oral Surgeon
- Nurses
- X-ray technician
- Physician Assistant
- Psychiatrist
- Environmental Consulting
- Natural Sciences Manager
- Mining
- Petroleum
- Green Energy
- Civil Engineer
- Aerospace Engineering
- Astronomy
- Engineering Manager
- Nanotechnology
- Materials Science

A recent U.S. Department of Commerce study shows that over the past 10 years, growth in Science, Technology, Engineering and Mathematics (STEM) jobs was three times greater than that of non-STEM jobs. The report also shows that STEM jobs are expected to continue to grow at a faster rate than other jobs in the coming decade.



Have you ever considered a career as a...



Science

- Acoustical Research Engineer
- Aeronautical Engineer
- Agricultural Engineer
- Anneal Physiology
- Archeologist
- Assembling Engineer
- Astrogeologist
- Astronaut
- Astronomer
- Astrophysicist
- Audio Engineer
- Bioanalyst

- Biochemist
- Botanist
- Cardiologist
- Chemical Engineer
- Chemist
- Computer Scientist
- Cytogeneticist
- Dentist
- Education
- Engineer
- Entomologist
- Food Science
- Food Science Technician
- Forensic Anthropologist
- Forensic Chemist
- Forensic Scientist
- Forestry
- Geologist
- Geoscientist
- Health Care Worker
- Herpetologist
- Horticulturist
- Life Science Writer

- Marine Biologist
- Molecular Biologist
- Neurobiologist
- Oceanographer
- Physical Trainer
- Physicist
- Plant Ecologist
- Plant Geneticist
- Plastic Surgeon
- Psychologist
- Quality Insurance Engineer
- Researcher
- Solid State Chemist
- Space Scientist
- Staff Scientists
- Structural Engineer
- Surgeon
- Systems Engineer
- Veterinarian
- Water Resources Engineer
- Wildlife Biologist
- Wildlife Ecologist
- Wildlife Psychologist
- Zoo Keeper
- Zoologist