



Science

The Clinton High School Science Department is dedicated to encouraging students to be strong, independent learners through an engaging curriculum and exciting courses. Our Science Department integrates state-of-the-art technology with a variety of challenging hands-on laboratory activities. Additionally, our rigorous curriculum allows students to make connections to modern society while stimulating their mind and maximizing their individual potential. At Clinton High School you'll find science teachers who are not only role models for lifelong learning but also caring, active members supporting the school and community. Our science department offers comprehensive courses in 14 different areas of study including: Honors, AP and post-secondary college level classes. In addition to the classroom learning experiences, CHS Science Department also offers educational encounters within the community through field trips, job shadowing and numerous communities of learners' projects.

Clinton High School Science Department: Excellence, Encouragement and Respect.

Potential Careers :

Biology: Biologist, Botanist, Marine Biologist, Horticulture, Agriculture, Animal Science, Veterinarian, Analytics, Medical Doctor, Nurse, Research, Biomechanical Engineer, Environmental Scientist, Education, Forensic Scientist, Scientific Writer, Government, Industry Researcher,

Chemistry: Chemist, Chemical Engineer, Toxicologist, Agriculture, Pharmacy, Environmental Scientist, Health Care, Medical Doctor, Nurse, Education, Forensic Scientist, Scientific Writer, Government, Industry Researcher

Physics: Physicist, Astronomer, Engineer (e.g., design, mechanical, electrical, aeronautical, etc.), Education, Electrician, Construction, Plumbing, Forensic Scientist, Scientific Writer, Government, Industry Researcher

Earth Science: Geologist, Oceanographer, Meteorologist, Astronomer, Engineer (e.g., Geologic, Hull, etc.) Education, Forensic Scientist, Scientific Writer, Government, Industry Researcher



SCIENCE

9 th Grade		
	Pathway 1	Pathway 2
Semester 1	Biology (1 st half)	Honors Biology (1 st half)
Semester 2	Biology (2 nd half)	Honors Biology (2 nd half)
10 th Grade		
Semester 1	Chemistry & Earth Science (both only take for a semester and in any order)	Honors Chemistry (1 st half)
Semester 2		Honors Chemistry (2 nd half)
11 th Grade		
Semester 1	Physics & Science Elective (both only take for a semester and in any order)	Honors Physics or College Physics (1 st half)
Semester 2		Honors Physics or College Physics (2 nd half)
12 th Grade		
	All Science graduation requirements should be met	Earth Science or Honors Astronomy
Science Electives		
1 semester courses	<ul style="list-style-type: none"> • Exercise Physiology • Zoology • Environmental Science • Honors Astronomy 	<ul style="list-style-type: none"> • Exercise Physiology • Zoology • Environmental Science
2 semester courses	<ul style="list-style-type: none"> • Anatomy & Physiology • AP Biology • Honors Physics • College Physics • AP Environmental Science 	<ul style="list-style-type: none"> • Anatomy & Physiology • AP Biology • AP Environmental Science



SCIENCE COURSE OFFERINGS

Below is a listing of courses offered through the Science Department. The graph indicates the course title, the grades that a student can take the offering, and the prerequisites for taking the class.

	Semesters	9 th Grade	10 th Grade	11 th Grade	12 th Grade	Prerequisite Courses
Biology	2	X				
Honors Biology	2	X				
Advanced Placement Biology	2			X	X	Biology, Chemistry
Chemistry	1		X	X	X	Biology, Algebra 1
Honors Chemistry	2		X	X	X	Biology, Algebra 1
Physics	1			X	X	Chemistry, Algebra 1
Honors Physics	2			X	X	Chemistry, Algebra 1
College Physics	2			X	X	Chemistry, Pre-Calculus or Honors Pre-Calculus, Proficient in Reading, Math and Science on ISASP
Earth Science	1		X	X	X	
Astronomy	1			X	X	Chemistry, Pre-Calculus, Proficient in Reading, Math and Science on ISASP
Environmental Science	1		X	X	X	Biology, Chemistry
Anatomy & Physiology	2		X	X	X	Biology
Zoology	1		X	X	X	Biology
Exercise Physiology	1		X	X	X	Biology, Anatomy and Physiology is strongly encouraged
AP Environmental Science	2			X	X	Biology/Honors Biology, Chemistry



CHEMISTRY

Grade: 10, 11, 12

Semesters: 1 **Credits:** 1

Prerequisites: Biology

Course Description: Chemistry is geared toward sophomore students who are interested in using knowledge of Chemistry to enter the working world, military, trade-school, or any other two-year post-secondary training upon graduation. This course is designed to provide real world understanding of consumer chemistry. It will include project based learning, incorporating the chemicals that we encounter in our day to day lives. In this course you will explore the latest development in chemistry, understand how elements bond together to create new substances and change their chemical properties. This class is a progression after you have completed Biology A and B.

HONORS CHEMISTRY

Grade: 10, 11, 12

Semesters: 2 **Credits:** 2

Prerequisites: Biology

Course Description: Honors Chemistry is a course designed for the 4 year college bound student. It is a fast-paced, academically intense course that is designed to increase your ability in academic/college preparation skills, collaborative work, science and engineering practices and basic chemistry theories.

- Academic/College preparation skills will have you develop and reflect on your ability in time management, reading comprehension and analysis of technical nonfiction writing, note taking, effective written communication, and test preparation strategies.
 - The courses collaborative ventures will emphasis skill development in social emotional skills that allow you to work successfully with diverse groups.
 - The science and engineering practices will teach you how to ask scientific questions and work to solve them through scientific investigations and creative design.
 - The content information will provide you with an understanding of the theories of chemistry and how they apply to you and the world around you.
-

PHYSICS

Grade: 10, 11, 12

Semesters: 1 **Credits:** 1

Prerequisites: Algebra I

Course Description: Physics is a study of how the world works. The course emphasizes the use of physics concepts and equations as guides to thinking rather than “plug and chug” problem solving. In addition to lecture, demonstrations, collaborative work, lab activities, and problem solving, coursework is enhanced by community projects where large groups work towards a common goal. Physics 1 is geared toward students who have completed Biology and are interested in using knowledge of physics to enter the working world, military, trade-school, or any other two-year post-secondary training upon graduation. This class is a progression after you have completed Biology A and B, and Chemistry. Completion of Algebra 1 would be helpful.

HONORS PHYSICS

Grade: 11, 12

Semesters: 2 **Credits:** 2

Prerequisites: Chemistry or Honors Chemistry, Algebra 1

Course Description: Honors physics is a course designed for students planning on immediately entering a 4 year college or university following high school graduation. Students will learn about the physical phenomena that they experience on a daily basis through the use of mathematics and real life experiences. Students will gain the background, problem solving and lab skills needed to continue their education. Students will be expected to complete the course final. There is an emphasis on math, so strong math skills are required.



COLLEGE PHYSICS 1: PHY 162, 4 Credits AND COLLEGE PHYSICS 2: PHY 172, 4 credits

COLLEGE CREDIT COURSE

Grade: 11, 12

Semesters: 2 **Credits:** 2

CHS Prerequisites: Chemistry or Honors Chemistry, Pre-Calculus or Honors Pre-Calculus, Proficient in Reading, Math and Science on Iowa Assessments

CCC Prerequisites: Application

Course Description: This course covers the equivalent two physics courses for students in liberal arts, pre-med, pre-vet, pre-dental, pre-pharmacy, and other students not majoring in the physical sciences, math, or engineering. Topics include fundamentals of mechanics, Newton's Laws of Motion, energy, momentum, periodic motions, fluids, rotation, thermal physics, wave behavior, electrostatics, electricity, electromagnetism, and optics. Applications and history are discussed.

EARTH SCIENCE

Grade: 11, 12

Semesters: 1 **Credits:** 1

Prerequisites: None

Course Description: This one semester course explores the foundations of Earth Science in the following related topics/fields: the origin and evolution of the Earth and its place in the universe, dynamic Earth processes, Energy in the Earth system, geochemical cycles, and the structure and composition of Earth systems (i.e., the Earth, Oceans and Atmosphere). This course is activity based and requires students to engage in scientific and 21st Century skills to solve problems with the goal of preparing students for college and the workforce (e.g., the use of Whole Class Inquiry and the Innovation Classroom). Students will have the opportunity for self-assessment as well as for teacher guidance and assessment throughout the course.

ASTRONOMY: PHS 152, 4 Credits

COLLEGE CREDIT COURSE

Grade: 11, 12

Semesters: 1 **Credits:** 1

CHS Prerequisites: Chemistry or Pre-Calculus, Proficient in Reading, Math and Science on Iowa Assessments

CCC Prerequisites: Application

Course Description: Astronomy is a college Astronomy program utilizing a college level text. This course is a basic course in descriptive astronomy dealing with the development of modern astronomy and with its present-day theories and observations. Topics covered include motions of solar system and deep sky objects, telescopes and other instruments, members of the solar system, nature of the sun, other stars, origin and development of stars and planets, our galaxy, other galaxies, and the organization of the universe. **SOME NIGHT LABS ARE REQUIRED.**

ENVIRONMENTAL SCIENCE

Grade: 10, 11, 12

Semesters: 1 **Credits:** 1

CHS Prerequisites: Biology, Chemistry

Course Description: The goal of the Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study (e.g., Biology, Chemistry, and Geosciences). Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science.



ANATOMY & PHYSIOLOGY

Grade: 10, 11, 12

Semesters: 2 **Credits:** 2

Prerequisite: Biology, Honors Biology

Course Description: This is a two-semester course that is designed for students possibly interested in careers in healthcare. In this course, students will learn about the relationships between the parts of their body including the study of structure and function of cells, tissues, and the integumentary, skeletal, and muscular systems. Functioning as a well-organized unit, this relationship helps to accomplish the many complex processes that take place in our body system. The laboratory component includes anatomical studies using microscopy and dissection and the study of physiological concepts via experimentation. In addition, students will determine how disease and improper care relating to these body systems can lead to damage of the structures and their functions. During the 2nd semester, students will learn about the relationships between the structure and function of the parts of their body including nervous, cardiovascular, digestive, respiratory, excretory, endocrine, and reproductive systems. The laboratory component includes anatomical studies using microscopy and dissection and the study of physiological concepts via experimentation. In addition, students will determine how disease and improper care relating to these body systems can lead to damage of the structures and their functions.

ZOOLOGY

Grade: 10, 11, 12

Semesters: 1 **Credits:** 1

Prerequisite: Biology

Course Description: The course gives an introduction to zoology, with particular emphasis on the systematics of both vertebrates and invertebrates. In addition, the students should acquire basic knowledge in ethology, evolution, and human ecology (including an introduction to the biosphere and biodiversity). Zoology is a course that will survey the nine major phyla of the kingdom Animalia. Zoology is the study of animal life. The course will research several different animals, their anatomy and interrelationships, their physiology and genetics, and their distributions and habitats. Human beings have been zoologists for as long as there have been human beings. As humans, we are intricately tied to animal life – we’ve depended on many of them for food, work, and friendship throughout our evolution and history ...not to mention that we ARE animals!

EXERCISE PHYSIOLOGY

Grade: 10, 11, 12

Semesters: 1 **Credits:** 1

Prerequisite: Biology, Chemistry 1

Course Description: This course will delve into the adaptations and effects that exercise has on the musculature and physiology of the anatomy of the body. In this course you will examine the microbiology, kinesiology, and physiology of muscle contractions. We will explore the micro changes that occur in the organs, systems, and chemistry involved in exercise adaptations. Other topics that may be discussed are sports medicine, organic compound effects, and genetic predispositions.

ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE

Grade: 11, 12

Semesters: 2 **Credits:** 2

Prerequisite: Biology/Honors Biology, Chemistry 1

Course Description: The goal of the AP Environmental Science course is to provide you with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them.

