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 life-long 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.
SCIENCE

Biology

Chemistry

Physics

Honors Biology

Honors Chemistry

Honors Astronomy

Honors Physics

AP Biology

AP Environmental Science

Anatomy & Physiology

Medical Careers

Science Electives:
Science Assistant
Biological Engineering
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.

<table>
<thead>
<tr>
<th>Trimesters</th>
<th>9th Grade</th>
<th>10th Grade</th>
<th>11th Grade</th>
<th>12th Grade</th>
<th>Prerequisite Courses</th>
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<tr>
<td>Honors Biology (Life Science)</td>
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<td>Chemistry, Algebra</td>
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<tr>
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<td>Anatomy &amp; Physiology</td>
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**SCIENCE COURSE OFFERINGS**

**HONORS BIOLOGY**
Grade: 9
Prerequisites: None
Trimesters: 2
Credits: 2

**Course Description:** Honors Biology is an advanced course open to freshmen that will focus on instructing students on the research, laboratory, and technical skills needed in the study of biology. In addition to daily class work, all students are required to utilize technology to research and participate in discussions of current science issues, complete lab write-ups and virtual labs, and research various topics throughout the course. Students are also expected to collaborate with other students in and/or out of the classroom utilizing skills that scientists use in a scientific community and the real world of science. Students will be expected to complete the course final.
BIOLOGY
Grade: 9, 10, 11, 12
Prerequisites: None
Trimesters: 2 Credits: 2
Course Description: In Biology, students will be fascinated as they explore the living world and the beauty of nature. We will delve into such topics as: evolution, cells, genetics, microorganisms, classification and ecology. This course is based on scientific inquiry projects, engaging labs and dissections, and activities to promote a learning community. Students will be exposed to a variety of learning techniques that range from the traditional to creative and innovative assignments of their own design.

ADVANCED PLACEMENT BIOLOGY
Grade: 11, 12
Prerequisites: Biology
Recommended but required: Chemistry, Anatomy and Physiology
Trimesters: 2 Credits: 2
Course Description: AP Biology is an elective course designed to be the equivalent of a year-long college introductory biology course taken by biology, premedical and other science majors. Biology is a discipline that is fascinating, constantly changing, and applicable to our everyday lives. As we work together this year, our course goals will be to:

- Develop an understanding and appreciation of the unifying themes that integrate the major topics of biology;
- Increase study skills in terms of reading comprehension, note taking and use, critical thinking skills and test preparation methods;
- Expand and apply analytical skills to assess the rapidly changing science of biology especially as it relates to environmental and social concerns;
- Gain laboratory skills and appreciation of science as a dynamic process through designing, implementing, and interpreting complex labs;
- Communicate effectively with peers and adults through speech, writing, graphics, and presentations;
- Participate actively and work cooperatively with one another in a positive classroom community;
- Take the Advanced Placement Biology exam and trimester finals to earn college credit, and increase achievement on high stakes tests;

Students who enroll in this course should be looking forward to an intellectual challenge that occurs in a supportive, caring learning environment. Students will be expected to complete the course final and the AP Exam.

CHEMISTRY
Grade: 10, 11, 12
Prerequisites: Algebra I (strong math skills are necessary), Biology
Trimesters: 2 Credits: 2
Course Description: Students will become a member of a scientific community whose purpose is to learn more about physical and chemical properties of substances around them. Community of learning projects and activities are a major focus in this class. Students are expected to participate in small and large group activities. Students will also experience the theoretical and experimental nature of science by doing research using the textbook, library, and laboratory as resources. The course begins with an in-depth study of the particulate nature of matter and builds on this concept in the further study of atoms, molecules, and the chemical reactions between them. Students are expected to put a minimum of 30 minutes of independent study in each night, regardless of whether homework is assigned. Additionally, students will be required to read and discuss one non-fiction work on chemistry each trimester.

HONORS CHEMISTRY
Grade: 10, 11, 12
Prerequisites: Biology
Trimesters: 2 Credits: 2
Course Description: Honors Chemistry is a class that is designed for the motivated student that has a strong desire to learn about the natural and physical world around them. This course will utilize community of learners projects, group work, and laboratory experiences to develop a knowledge about the structure of matter and how it interacts. As a result of this class, students will gain the background, problem-solving and lab skills needed to
continue in a chemistry education. Students will be expected to read and discuss two works of non-fiction on a chemistry related topic (1 each trimester). Students will be expected to complete the final exam each trimester.

**PHYSICS**

Grade: 10, 11, 12  
Prerequisites: Algebra I, math skills  
Trimesters: 2  
Credits: 2  

*Course Description:* Physics is a study of how the world works. This course emphasizes the use of equations as guides for thinking rather than recipes for “plug and chug” problem solving. Algebra and trigonometry will be extremely helpful, but not absolutely essential. 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. Project Hurl (building a trebuchet type catapult), Project Probe (building a “spacecraft” to land on a moving planet) and Project Rocket Ubh (launching a water/pressure powered rocket with an egg as cargo) are examples of community projects.

**HONORS PHYSICS: PHY 162: College Physics I, 4 Credits & PHY 172: College Physics II, 4 credits**

Grade: 11, 12  
Prerequisites: Chemistry or Honors Chemistry, Pre-Calculus or Honors Pre-Calculus  
Trimesters: 2  
Credits: 2  

*Course Description:* Honors Physics is a college physics program utilizing a college level text. Students successfully completing this course will earn college credit in Physics. Honors Physics is not based on the AP Physics test, but is a trigonometry-based course designed for first year physics students interested in pursuing further coursework in science and technology. Students will gain the background, problem solving and lab skills needed to continue a physics education. Students will be expected to complete course final.

**EARTH SCIENCE**

Grade: 11, 12  
Prerequisites: None  
Trimesters: 1  
Credits: 1  

*Course Description:* This one trimester 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 scientific and 21st Century skills to solve problems with the goal of preparing students for college and the work force (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.

**HONORS ASTRONOMY: PHS 152: Astronomy, 4 Credits**

Grade: 11, 12  
Prerequisites: Chemistry or Pre-Calculus  
Trimesters: 1  
Credits: 1  

*Course Description:* Honors 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.

**ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE**

Grade: 10, 11, 12  
Prerequisites: Biology, Chemistry  
Trimesters: 2  
Credits: 2  

*Course Description:* The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the inter-relationships 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 the Geosciences). Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science.

**SCIENCE ASSISTANT**

Grade: 11, 12  
Prerequisites: None  
Trimesters: 1  
Credits: 1  

*Course Description:* Students will work independently under the direction and supervision of a specific CHS science teacher. Duties may include:
- Assist in setting up, taking down, and maintaining lab equipment.
- Devise and set up science demonstrations.
- Prepare science related presentations to enhance and supplement classroom activities.
- Work on independent experimental design projects.
- Organize science teaching materials.
- Prepare science displays for classrooms and corridors.
- Perform independent research on science topics.

**BIOLOGICAL ENGINEERING (BE)**

Grade: 10, 11, 12  
Prerequisite: None  
Trimesters: 2  
Credits: 2  

*Course Description:* This class is a rigorous activity, project, and problem-based course in which students investigate and design solutions to solve real-world challenges related to world food security, renewable energy, and clean drinking water. Students completing Biological Engineering will develop an understanding of the scientific and technological foundations for each of the problems. Students apply their knowledge and skills as they use an engineering design process to design and test solutions that help solve these global challenges.

**ANATOMY & PHYSIOLOGY**

Grade: 10, 11, 12  
Prerequisite: None  
Trimesters: 2  
Credits: 2  

*Course Description:* In this course students will learn about the relationships between the parts of their body and the specific jobs that those parts do. Functioning as a well-organized unit, this relationship helps to accomplish the many complex processes that take place in our body system. Students will discover the different structures that comprise our bodies and also seek to understand how those components work with other structures to carry out the processes that enable us to continue life. In addition, students will determine how disease and improper care of our bodies can lead to damage of the structures and their functions.

Possible Science PSEO courses available in 2015-2016 based on enrollment:
- **Anatomy & Physiology:** The major areas of study include the structures and functions of cells and tissues, as well as the integumentary, skeletal, muscular, nervous systems, endocrine, circulatory, lymphatic, respiratory, digestive, urinary, and reproductive systems. Interactions of these organ systems will be studied as they pertain to homeostasis, physiology, and kinesiology. This course includes lectures and weekly laboratories.