

# Science Courses

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**PHYSICAL SCIENCE 9**  
**(1 Credit-1 Year) 325**  
**326**  
**(Required for Graduation)**

Physical Science is a project-oriented course introducing Chemistry and Physics. Emphasis is placed on practicing scientific reasoning. Topics addressed include matter and energy, atomic structure, elements, compounds and mixtures, physical and chemical changes, motion, heat, waves, sound, light and color, electricity, magnetism, space science, and other current issues in society.

The course is presented through projects, lab experiences, text, computer and other media.

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**BIOLOGY**  
**10**  
**(1 Credit-1 Year) 331**  
**332**  
**(Required for Graduation)**

This Biology course is designed to provide the student with a broad understanding of living things. The ultimate goal of the course is to obtain an understanding of the human being and their relationship to the living world. To accomplish this goal, you will study many interesting and varied aspects of biology, including laboratory experiments and dissections.

This course is divided into 6 principle areas of study:

1. Principles of Cell Biology
2. Heredity and Genetics
3. Photosynthesis and Plant Studies
4. Classification, Evolution & History of Living Organisms
5. Invertebrate & Vertebrate Animal Studies
6. Human Biology

The focus of this course is to provide the students with exploratory opportunities along with a broad knowledge of major biological concepts.

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**ADVANCED BIOLOGY**  
**11-12 (Honors Course)**  
**(1 Credit-1 Year) 337**  
**338**

**\*Prerequisite: Chemistry**

**\*\*Biology 10 Teacher's  
Signature Required**

This is an honors course of advanced biological study for students who have successfully completed Biology 10. Students must have their Biology 10 teacher's signature accompany their registration form. Also, Chemistry is a prerequisite for this course. Junior or Seniors enrolling in Advanced Biology must have taken or are concurrently taking Chemistry before enrollment is accepted. Continued enrollment in mathematics course is strongly suggested for all juniors and seniors.

This course includes content areas such as:

1. Biochemistry
2. Advanced Genetics, Heredity & Evolution
3. Microbiology
4. Limnology (Aquatic Ecosystems Biological Interaction)
5. Human Anatomy & Physiology

Accompanying the advanced coursework students will be required to do extensive laboratory work, including several organ and higher vertebrate dissections, microbiology experiments, and aquatic ecosystems research in the field.

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# Science Courses continued

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**ECOLOGY &  
CONSERVATION  
11-12**

**(1 Credit-1 Year)      340  
   341**

**\*Prerequisite: Passing Grade  
in Biology**

This science course will provide the student with an understanding of the concepts and principles of ecology and conservation.

Major units of study will include: basic ecology, populations, population management, energy and resources, forestry, fisheries, ornithology, botany, succession of lakes, rivers, streams, swamps, bogs, and forests.

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**CRIME SCENE  
INVESTIGATIONS  
11-12**

**CHEMISTRY CSI      333  
   334**

**ADV BIOLOGY CSI      335  
   336**

**\*Prerequisites: Biology 10  
and Algebra**

Crime Scene Investigations is a course that combines the major topics covered in Advanced Biology and Chemistry. One crime scene investigation will be analyzed every grading period that links classroom skills with real world experiences. Students must have completed Biology 10 with the instructor's signature prior to registration. Algebra is also a prerequisite for this course. By enrolling in CSI you will be in both Advanced Biology and Chemistry.

You will receive 1 credit for Chemistry and 1 honors credit for Advanced Biology.

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**CHEMISTRY  
11-12**

**(1 Credit-1 Year)      343  
   344**

**\*Prerequisites: Algebra, or  
Algebra IB, Biology**

Chemistry is the study of matter. All the material that makes up our world will be the focus of chemistry. This course will enrich our understanding of the elements, compounds, mixtures and chemical reactions. Studying chemistry will help students understand the complex world we live in.

Most colleges require chemistry for admission. Hundreds of careers will have chemistry as part of their training. Skills and understanding of chemistry opens many doors to the world of science and technology. Clearly presented lectures, experiments, demonstrations and student assignments will enable future academic success for our chemistry students.

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**ADVANCED PLACEMENT  
CHEMISTRY 12  
(Honors Course)**

**(1 Credit-1 Year)      346  
   347**

**\*Prerequisites: Chemistry 1,  
Advanced Algebra and  
enrollment in Physics.**

**A strong math background is  
recommended  
\*\*Teacher Signature  
Required**

The A.P. Chemistry Program is a cooperative endeavor involving colleges, universities and secondary schools. The program is intended to teach a college level course in the high school for gifted and talented students. A.P. Chemistry covers curriculum similar to that covered in an entry level college course. Students are expected to understand and use major concepts presented in chemistry and then apply them in the AP Program. **See prerequisites listed in the left column.**

In addition to receiving high school credit, students may elect to pay a fee and take the AP Chemistry exam in early-May. A passing score on the exam can earn you undergraduate credit. Passing the exam will require studying the materials outside of class. Check with the schools you are interested in attending for more information about the accepted scores and credits they will honor.

# Science Courses continued

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**PHYSICS**  
**11-12**  
**(1Credit-1 Year)**      **349**  
   **350**

Physics is the most fundamental of all the sciences. It's about the nature of motion, forces, energy, matter, heat, sound, light, electricity, magnetism, and the insides of atoms. Physics classes at Superior High feature, numerous demonstrations, and "hands-on" lab activities. This course includes research and investigation into physics topics chosen by students.

**Physics requires good Algebra 1 skills, some Geometry, and Right Triangle Trigonometry. It is intended for Seniors.**

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**ADVANCED PLACEMENT**  
**PHYSICS**  
**11-12**  
**(Honors Course)**  
**(1 Credit-1 Year)**      **352**  
   **353**

The Advanced Placement (AP) Physics B course represents one of the two major types of introductory physics courses offered at the college level. It is a noncalculus survey course, encompassing mechanics, electricity and magnetism, waves and optics, heat and thermodynamics, and modern physics. It is intended for highly motivated students who would enjoy the challenge of college level courses. **Strong Math background recommended.**

**\*Teacher Signature**  
**Required**

Along with topics studied in physics a wider variety of more challenging problems are assigned. Numerous demonstrations and lab activities however, remain a vital part of this class.

In addition to receiving high school credit, students may elect to pay a fee of \$74.00 and take the AP physics B exam. A passing score earns undergraduate credit and/or advanced placement at participating colleges.

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**GEOLOGY**  
**11-12**  
**(1Credit-1 Year)**      **355**  
   **356**

Geology is the study of the earth; that branch of earth science that treats the origin, composition, structure, and history of the earth, especially in prehistoric time.

Topics of study include: physical geology, the study of rocks and minerals, volcanoes, earthquakes, glaciers, mountain building and erosion, historical geology, continental drift, the evolution of the earth's crust, and the geology of the western Lake Superior Region. Roles of minerals, fuels and geological hazards are investigated.

**\*Prerequisite: Successful**  
**completion of Biology**

This course is open to all juniors and seniors interested in broadening their knowledge and understanding of the earth around them.

# Science Courses continued

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## **Pre-Engineering & Pre-Engineering Technology**

These project-based classes are part of the Project Lead the Way (PLTW) national course offering for students thinking they may want to pursue a career in engineering or engineering technology. An Engineer typically has a four year college degree while an Engineering Technician is typically a graduate of a two year technical college. Each course is a full year course and follows the rigorous curriculum outlined by PLTW. The two courses of Introduction to Engineering Design (IED) and Principles of Engineering (POE) are offered for school year 2005-06. Digital Electronics (DE) and Computer Integrated Manufacturing (CIM) are scheduled to be offered for school year 2006-07 with the capstone course of Engineering Design and Development (EDD) scheduled for school year 2007-08.

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## **INTRODUCTION TO ENGINEERING DESIGN 9-12**

**(1Credit-1 Year)      361  
   362**

This design-oriented class is a foundation course in the national pre-engineering curriculum outlined by Project Lead the Way (PLTW). IED follows the industrial design process from concept to selection to drawing to presentation. The curriculum is presented out of the Computer Aided Drafting laboratory and is a recommended course before taking additional Project Lead the Way courses.

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## **PRINCIPLES of ENGINEERING 10-12**

**(1Credit-1 Year)      357  
   358**

Principles of Engineering is a course that helps students understand the field of engineering and engineering technology. Exploring various technology systems and manufacturing processes help students learn how engineers and technicians use math, science, and technology in an engineering problem solving process to benefit people. This course also addresses concerns about social and political consequences of technological change. Success in Principles of Engineering requires the ability to use (or learn) algebra and basic trigonometry.

**College Credit** – students must pass a national final exam to qualify for credit in affiliated college engineering programs.

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# Science Courses continued

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**HUMAN ANATOMY &  
PHYSIOLOGY**  
**11-12**  
**(1Credit-1 Year)      359**  
**360**

**\*Prerequisite: Biology and  
Chemistry**

**\*Teacher Signature  
Required**

Anatomy and Physiology is an investigative course that examines the structure and function of the complete human body. Using laboratory dissections and inquiry based assessment tools, students will be engaged in a curriculum that studies and ethically represents current knowledge and medical techniques relating to the human body. With the increase in availability of employment in medical fields this course is designed to give the student advanced knowledge of the human body's development and its structure and function as it relates to technological advancements in the field of medicine. Anatomy and Physiology will also examine the ethical aspects of medical research and its benefits and/or drawbacks to human society.