

## SCIENCE DEPARTMENT

Related Careers: An understanding of science brings an appreciation of many phenomena in our environment. Related careers include medical personnel, pharmacists, engineers, ecologists, taxidermists, foresters, bacteriologists, anthropologists, biochemists and a host of other scientists.

### REQUIRED COURSES:

| GRADE 9                          | GRADE 10                        | GRADE 11   | GRADE 12 |
|----------------------------------|---------------------------------|--|----------|
| <a href="#">Physical Science</a> | <a href="#">General Biology</a> | <a href="#">General Chemistry</a> (if not taken in gr 10) <b>OR</b><br><a href="#">College Physics</a> |          |

### ELECTIVE COURSES:

|  |   |   |   |
|--|---|---|---|
|  | <a href="#">Minnesota DNR Studies</a><br><a href="#">General Chemistry</a><br><a href="#">Forensic Science</a><br><a href="#">Principles of Engineering</a> | <a href="#">Minnesota DNR Studies</a><br><a href="#">Forensic Science</a><br><a href="#">College Anat &amp; Phys</a><br><a href="#">General Chemistry</a><br><a href="#">College Biology I &amp; II</a><br><a href="#">College Chemistry I &amp; II</a><br><a href="#">College Physics</a><br><a href="#">College Medical Term</a><br><a href="#">Principles of Engineering</a> | <a href="#">Minnesota DNR Studies</a><br><a href="#">Forensic Science</a><br><a href="#">College Anat &amp; Phys</a><br><a href="#">General Chemistry</a><br><a href="#">College Biology I &amp; II</a><br><a href="#">College Chemistry I &amp; II</a><br><a href="#">College Physics</a><br><a href="#">College Medical Term</a><br><a href="#">Principles of Engineering</a> |
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#### **301     Physical Science**

**302   4 terms   1 credit**

**Pre:** None

**Grade Level:** 9 Required

**Course Summary:** This course is designed to give a basic background in Chemistry and Physics. Topics covered include properties of matter, atomic structure, radioactivity & periodic table. Topics covered in Physics include machines, laws of motion, sound, light, and heat. Experiments will be used throughout the course to enhance the subject matter & help develop good lab technique.

#### **305     General Biology**

**306   4 terms   1 credit**

**Pre:** None

**Grade Level:** 10 REQUIRED

**Course Summary:** This course deals with the study of life. Topics covered include organic compounds, cell structure, genetics-DNA, photosynthesis, cell energy, cell cycles, evolution, and ecology.

#### **311     General Chemistry**

**312   4 terms   1 credit**

**Pre:** None

**Grade Level:** 10 - 12 (\***10th graders** need instructor permission, min. req. of a B+ avg in 9th Phys Science)

**Course Summary:** Chemistry is the study of matter and the changes it undergoes. This course is recommended to all students planning on attending college or technical school. Chemistry is both qualitative and quantitative where students investigate the properties and laws of matter in the laboratory and classroom. Chemistry is the central science for all sciences. The 4 term course fulfills the Chemistry standard needed for students to graduate.

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**313 Minnesota DNR Studies****2 terms 1/2 credit****Pre:** none**Grade Level:** 10 -12

**Course Summary:** This course is designed for students interested in exploring the environmental issues currently facing the Minnesota DNR. The course will include exploration of current woods, water, and wildlife issues. For example; white tail deer and timber wolves relationship, zebra mussel and Eurasians milfoil invasion, walleye population studies, water quality of local water bodies, wild life management techniques. This course will cover the Minnesota Science Environmental standard.

**Lab Fee:** \$10.00**314 Forensic Science****1 term 1/4 credit****Pre:** General Chemistry A**Grade Level:** 10 - 12

**Course Summary:** "CSI" in the classroom. This hands on course will take students through the science of police work. The course will tackle some of the basic tools and procedures law enforcement agencies use to gather evidence and convict criminals (fingerprinting, DNA analysis, crime scene procedures, etc.) Forensics is a great class for anybody interested in the medical or a criminal justice fields.

**Lab Fee:** \$5.00

\*\*\*All CITHS courses are subject to the entrance requirements outlined in the Registration Guide

**320 College Anatomy & Physiology (CITHS)****4 terms 1 credit 4 College Credits****Pre:** General Biology & CITHS requirements**Grade Level:** 11 - 12

**Course Summary:** This is a class that will concentrate on the structure and function of the human body. This course will cover the major organ systems of the human body. Students interested in the health and medical fields should take this course.

**Lab Fee:** \$10.00 per trimester.**321 College Biology I (CITHS)****4 terms 1 credit RHS 4 College Credit****Pre:** Gen Biology (Student should have had a strong B average.) & CITHS requirements**Grade Level:** 11 - 12

**Course Summary:** Fundamental concepts of biology, including evolution, chemical basis of life, cell structure and function, energy transformations, photosynthesis, cellular respiration, genetics, molecular biology, DNA technology,.

**Lab fee:** \$20.00**322 College Biology II (CITHS)****2 terms 1/2 credit RHS 4 College Credit****Pre:** College Biology I**Grade Level:** 11-12

**Course Summary:** Fundamental concepts of biology, origin of life, classification and diversity of life, anatomy, physiology, and development of prokaryotes, protistans, fungi, animals and plants, behavior, population, community and ecosystem ecology and human body systems.

**Lab fee:** \$10.00**325 College Chemistry I (CITHS)****4 terms 1/2 credit RHS 5 College Credit****Pre:** General Chemistry & CITHS requirements**Grade Level:** 11 - 12

**Course Summary:** An in-depth study of the principles of chemistry with emphasis on atomic and molecular structure, periodic relationships, stoichiometry, structural concepts, bonding, the geometry of molecules, gaseous, liquid and solid states, energetics, theory of solutions, kinetics, equilibrium, acids and bases, aqueous equilibria, chemistry of selected cations and anions, environmental concerns, electrochemistry, nuclear chemistry and coordination complexes.

**Lab Fee:** \$20.00 per course.

**326 College Chemistry II (CITHS)**

**2 terms 1/2 credit RHS 5 College Credit**

**Pre:** General Chemistry

**Grade Level:** 12

**Course Summary:** same as College Chemistry I.

**Lab Fee:** \$10.00

**327 College Introduction to Physics (CITHS)**

**328 4 terms 1 credit RHS 8 College Credit**

**Pre:** Algebra II & CITHS requirements

**Grade Level:** 11 - 12

**Course Summary:** Concepts in mechanics, electricity, magnetism, heat, light, sound, and modern physics will be explored through extensive laboratory activities.

**330 College Medical Terminology (CITHS)**

**1 term 1/4 credit 1 College Credit**

**Pre:** CITHS requirements

**Grade Level:** 11-12

**Course Summary:** This course teaches the student to recognize and build medical terms after learning the meaning of word parts. The student will learn how to interpret common medical abbreviations. This is a valuable course for students interested in health care careers. This course is an independent study class with online assessments.

**645 Principles of Engineering (POE)**

**2 terms 1/2 credit**

**Grade Level:** 10 – 12

**Course Summary:** Designed for 10th or 11th grade students, this course is designed to introduce students to basic electronics and automation. Students will learn to design basic electronic circuits and write computer code to control devices such as servos and motors which respond to various sensor inputs. Students will develop problem-solving skills and apply their knowledge of mechanisms and programming to create solutions to various challenges. Students will also learn how to properly document their work and communicate their results and solutions

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