

| SCIENCE DEPARTMENT | | | |
|--|--------------------------------|--------------|--|
| COURSE | # | GRADE | PREREQUISITE |
| Basic Applied Science & C.P. Applied Science | SC2120/SC2130 SC2220/SC2230 | 9 | None |
| Basic Biology | SC2101/SC2102 | 10 - 12 | Applied Science |
| College Prep Biology | SC2091/SC2092 | 10 - 12 | C.P. Applied Science |
| Human Biology | SC2301/SC2302 | 11 - 12 | Applied Science & Biology |
| C.P. Anatomy & Physiology | SC2061/SC2062 | 11 - 12 | C. P. Applied Science & Biology |
| Active Chemistry | SC2071/SC2072 | 11 - 12 | Applied Science & Biology |
| Chemistry I | SC2031/SC2032 | 10 - 12 | C or better in C.P. Applied Science, C.P. Biology & Algebra |
| Chemistry II | SC2021/SC2022 | 11 - 12 | Chemistry I |
| Conceptual Physics | SC2081/SC2082 | 12 | Applied Science & Biology |
| Physics | SC2011/SC2012 | 11 - 12 | C or better in Algebra II |
| Independent Study | SC2001/SC2002 | 12 | Must have sponsoring teacher and must have approval of Science Department |
| Scientific Exposition | SC2051/SC2052 | 11 -12 | Three years of Science |
| Scientific Investigation | SC2241/SC2242 | 11 - 12 | Recommendations from Two Science Teachers, Typed 3/4 page report on "Why Student Would Like to Take The Class" |
| Astronomy | DL5801 | 12 | Grade of "B" in previous science courses. Three years of Science. |
| Honors Genetics | DL5901 | 12 | Three years of Science. |
| Marine Biology | DL5800 | 12 | Three years of Science. |
| Honors Microbiology | DL5902 | 12 | Three years of Science. |
| Sports Medicine | DL5911/DL5912 | 11 - 12 | 2 years completed science |

All students must have a minimum of three years of science to graduate from high school.

Recommended Classes

| | <u>Non College Prep</u> | <u>College Prep</u> |
|------------------------------|--------------------------------------|---|
| 9th grade | Applied Science | CP Applied Science |
| 10th grade | Biology | CP Biology |
| 11th grade | Human Biology or Action Chemistry | Chemistry or CP Anatomy/Physiology |
| 12th grade | Conceptual Physics | Chemistry II, Physics or CP Anatomy/Physiology |

Electives

Scientific Exposition
Scientific Investigation
Independent Study

GenNET for Seniors

Astronomy
Honors Genetics
Honors Microbiology
Marine Biology
Sports Medicine

APPLIED SCIENCE & SC2120/SC2130 GRADE 9 FULL YEAR
C.P. APPLIED SCIENCE SC2220/SC2230

Applied Science and College Prep Applied Science are science courses following the Michigan Essential Goals and Objectives for Science Education and Core Curriculum. The main goal is for students to become scientifically literate. These scientific concepts and aspects will provide the students with a better understanding of their life and environment. These courses will deal with basic concepts of non-biological sciences, construction of laboratory work, hands-on activities and demonstrations.

BASIC BIOLOGY & SC2101/SC2102 GRADE 10 - 12 FULL YEAR
C.P. PREP BIOLOGY SC2091/SC2092

College Prep and Basic Biology deal with the study of living organisms and the kingdoms to which they belong. Fundamental biological theories and principles are covered. Emphasis is placed on investigating living things from simple to complex, their interaction with each other and the environment. The 1st semester focuses on biological principles, cells, genetics, evolution, and microorganisms. The 2nd semester focuses on plants, invertebrates, vertebrates, ecology and human biology. A comprehensive and intensive fetal pig dissection is included at the end of the year.

HUMAN BIOLOGY SC2301/SC2302 GRADE 11 - 12 FULL YEAR

This two semester course is a continuation of tenth grade biology. The class will focus on the major systems of the human body, related diseases and how the environment brings about some of these diseases. The class is geared toward students not planning on going to college but needing a third year of science.

C.P. ANATOMY & PHYSIOLOGY SC2061/SC2062 GRADE 11 - 12 FULL YEAR

This course deals mainly with the structure and function of the human body, which includes dissections. It would be especially valuable to students interested in becoming a doctor, nurse, medical technologist, dental hygienist or a science field.

ACTIVE CHEMISTRY SC2071/SC2072 GRADE 11 - 12 FULL YEAR

This is a general chemistry course intended for those who want to take chemistry but do not need all the background available in Chemistry I. The mathematics involved is limited to basic relationships needed for measuring and comparing quantities. Students learn the basics of chemistry by focusing on core concepts and use the periodic table as an informational tool. Laboratory work is emphasized in the understanding of concepts.

CHEMISTRY I SC2031/SC2032 GRADE 10 - 12 FULL YEAR

Chemistry I is intended to provide the basic background which would be expected as preparation for college chemistry. Topic areas will include: matter, measurements, moles, chemical reactions, gases, atomic structure, periodic table, chemical bonding, and solutions. In the

pursuit of understanding how matter behaves and being able to describe its behavior to others, emphasis will be placed on thought, reason, and logic processes.

CHEMISTRY II SC2021/SC2022 GRADE 11 - 12 FULL YEAR

Chemistry II is a second year program which investigates areas not covered in Chemistry I or those areas which need more depth coverage. Emphasis will be on theoretical aspects of Chemistry. Topics will include: The structure of matter, kinetic theory of gases, chemical equilibrium, chemical kinetics, and the basic concepts of thermodynamics. The material presented will provide the needed background for those considering taking the AP Chemistry Test. The last portion of the year will put emphasis on qualitative analysis and individual laboratory work.

CONCEPTUAL PHYSICS SC2081/SC2082 GRADE 12 FULL YEAR

As the name implies, Conceptual Physics focuses on understanding concepts without a heavy reliance upon advanced math. The course is designed so that you can learn the concepts of physics through observation, projects, lab work, and problem solving in addition to reading. This course is lab based with many hands-on activities.

In Conceptual Physics, we will learn about Mechanics - that is motion and forces based upon Newton's laws; Matter and its properties; Energy in the forms of heat, light and sound, Electricity and Magnetism and possible other topics.

* Note* This is a full year course and is geared toward students who plan on going on to college but will not major or minor in a math or science related field.

PHYSICS SC2011/SC2012 GRADE 11 - 12 FULL YEAR

This is a laboratory science dealing with the study of matter, energy and motion. It is concerned with such concepts as mechanics (moving bodies), static (non-moving bodies), energy forms (such as heat, light, sound, atomic and matter), and their effects. We will conduct several projects during the year such as the "scrambler" and the "cardboard boat". This course is considered necessary for all students who plan to take any engineering, electronics, or physical sciences in college.

PREREQUISITE: "C" or better in Algebra II

INDEPENDENT STUDY SC2001/SC2002 GRADE 12 ONE SEMESTER

A student may take one semester of independent study in science that is not covered in our curriculum. This is an opportunity for students to concentrate their studies on one specific aspect of science.

PREREQUISITE: Student must have sponsoring teacher and must also have the approval of the Science and Guidance Department.

SCIENTIFIC SC2051/SC2052 GRADE 11 - 12 FULL YEAR
EXPOSITION

In this course you will learn to develop and present science experiments and demonstrations for elementary students. This course is ideal for students who are considering teaching as a profession as well as those who enjoy science and working with younger children. An application for this class may be picked up from Mr. Gregory or in the guidance office.

SCIENTIFIC INVESTIGATION **SC2241/SC2242** **GRADE 11 - 12** **FULL YEAR**

This class is available to juniors and seniors who have successfully completed College Prep Applied Science and College Prep Biology. The year long course will cover a variety of two week modules encompassing the following topics:

- Forensics - Orienteering - Fermentation -
- Microbiology - Forestry - Electrophoresis -
- Bacteriology - Cytology - Histology - Botany -
- Biotechnology - Lasers - Spectrometry -
- Spectrophotometer - Computer Simulations -
- Tissue Propagation - Holography - Hydroponics.

Upon completion of each module, each student will submit a typed report. Therefore typing skills and self-motivation are essential. The class is strongly recommended for students who need to strengthen their writing in summaries and analysis before entering college.

PREREQUISITE: Recommendations from two (2) Science Teachers. Must submit a typed 3/4 page report on "Why he/she would like to take the class."

ASTRONOMY **DL5801** **Grades 12** **SEMESTER**

Students will study in depth many areas of space science including, but not limited to astronomical instruments, physical features of the Universe and the various space programs. These will revolve around four themes: changing concepts of the cosmos, planets: past and present, the universe of stars and galaxies, and how space exploration has affected us. ***This is a GenNET class.*** To be considered for this class, an application needs to be filled out in the Guidance Office.

PREREQUISITE: Grade of "B" in previous science courses.

HONORS GENETICS **DL5901** **Grades 12** **SEMESTER**

Students will have an in-depth exposure to fundamental methods of inheritance and biochemical genetics, study many human traits and their effect on the body, study/experience bioengineering, deal with the ethical dilemmas and look at the prospects of the future of human genetics. ***This is a GenNET class.*** To be considered for this class, an application needs to be filled out in the Guidance Office.

PREREQUISITE: Biology, Students must be capable of good time management in order to complete the course requirements.

HONORS MICROBIOLOGY **DL5902** **Grades 12** **SEMESTER**

During the semester students will be exposed to information on a biochemical level related to microorganism structure, growth and control. In addition, students will study infectious life cycles, cause-effect relationships, and methods of disease transmission and examine the current status of threats to mankind from infectious disease. Students

will learn many lab techniques which will be used to help identify several 'unknown' organisms. ***This is a GenNET class.*** *To be considered for this class, an application needs to be filled out in the Guidance Office.*

PREREQUISITE: Biology, ability to manage time and work cooperatively.

MARINE BIOLOGY **DL5800** **Grades 12** **SEMESTER**

This course is the study of both salt-water ecology and physical adaptations of marine organisms. The content of the course focuses on both the living and non-living elements of aquatic ecosystems. Students will gain an understanding of the relationships between living things in an ecosystem as well as the on-going impact of human activities on natural ecosystems. Structure and function of marine organisms will be extensively explored. Students will also explore current issues in the management and protection of our precious aquatic habitats as well as a review of career and educational opportunities. ***This is a GenNET class.*** *To be considered for this class, an application needs to be filled out in the Guidance Office.*

PREREQUISITE: Biology

SPORTS MEDICINE **DL5911/DL5912** **Grades 11 - 12** **FULL YEAR**

Students will learn the basics of Sports Medicine. The relationship between anatomy, physiology and injuries will also be covered. ***This is a GenNET class.*** *To be considered for this class, an application needs to be filled out in the Guidance Office.*

PREREQUISITE: 2 years completed science