SCIENCE

3 CREDITS REQUIRED: 1 in PHYSICAL SCIENCE, 1 in ESSENTIALS OF BIOLOGY OR BIOLOGY, AND 1 in ESSENTIALS OF CHEMISTRY, CHEMISTRY OR PHYSICS

ESSENTIALS OF BIOLOGY 1 CREDIT

Essentials of Biology is designed to provide students an introduction to basic biological concepts. Topics covered include chemistry of life, ecology, cell structure, photosynthesis and respiration, heredity and genetics, structure and development of plants and animals. This course is designed for students who do not plan on studying science in college. This class will fulfill the requirements for the State of Michigan High School Content Expectations for Biology.

BIOLOGY 1 CREDIT

Advanced Biology is a more rigorous and in-depth course designed to familiarize the college-bound student with basic biological ideas. Advanced Biology examines the topics of: the chemistry of life, ecology, cellular structure, photosynthesis, respiration, genetics, heredity, classification and the structure and development of plants and animals. The course is designed to enable each student to engage in a variety of experiences to study biology including outdoor and indoor laboratory sessions, reading assignments, and evaluation exercises in order to develop skills in scientific observation and reasoning. This class fulfills the requirements of the State of Michigan High School content expectations for Biology.

PHYSICAL SCIENCE (REQUIRED) 1 CREDIT

This course is an introduction to science at the high school level. Topics covered will include matter, forces, energy, waves, Earth's place in the universe, Earth systems, and Earth and human activities. Atomic structure and trends in the periodic table will also be presented. This course will cover the Michigan Academic Standards and Next Generation Science Standards.

PHYSICS B (Offered only to students who passed Physics A in 2016 or 2017) 0.5 CREDIT

The course is a continuation of Physics A and involves more mathematics while taking a more in depth view of topics like motion, projectiles, forces, gravity, energy, and waves. This course fulfills the Core Level of the Michigan Science High School Content Expectation.

ADVANCED PHYSICS - AP PHYSICS 1 1 CREDIT

****Prerequisite: Geometry and Advanced Biology with at least a "C" average ** May be taken concurrently with Algebra II**

Advanced Physics, or AP Physics 1, focusses on the big ideas typically included in the first semester of an algebra based, introductory college-level physics sequence and provides students with enduring understanding to support future advanced course work in sciences. Through inquiry-based learning, students will develop critical thinking and reasoning skills, as defined by AP Science Practices. Topics cover include; Kinematics, Dynamics, Circular Motion, Universal Gravitation, Simple Harmonic Motion, Momentum, Energy, Rotational Motion, Electrostatics, DC Circuits, Mechanical Waves, & Sound This is an introductory college Physics course and credit may be earned by taking the AP Exam.

ESSENTIALS OF CHEMISTRY 1 CREDIT

Completion of this course will fulfill the requirements for the State of Michigan High School content expectations for Chemistry. This course will focus on the core expectations in the Michigan academic standards/NGSS for Chemistry. Topics include periodic trends, atomic structure, chemical reactions, chemical bonds, nomenclature, acid/base chemistry, carbon chemistry and nuclear chemistry.

CHEMISTRY B (Offered only to students who passed Chemistry A in 2016 or 2017) 0.5 CREDIT

Completion of this course will fulfill the requirements for the State of Michigan High School content expectations for Chemistry. This course will focus on the core expectations in the Michigan Merit Curriculum for Chemistry. Topics include periodic trends, atomic structure, chemical reactions, chemical bonds, nomenclature, acid/base chemistry, carbon chemistry and nuclear chemistry.

CHEMISTRY 1 CREDIT

****Prerequisite: Geometry or Algebra II and Biology with at least a "C" average ****

Chemistry is the study of the composition of matter and the changes that take place in matter. Topics studied include the following: metric system, atomic structure, chemical bonding, mole concept, gas laws, nomenclature, and the periodic table of the elements. Basic laboratory experimentation and the use of algebra skills in problem solving is a class expectation. This course is recommended for upper level and college bound students. Advanced Chemistry B is a continuation of advanced chemistry topics begun in Advanced Chemistry A. Students will investigate chemical equilibrium, enthalpy, entropy, reduction/oxidation chemistry and acid/base chemistry. Completion of this course will fulfill the requirements for the State of Michigan High School content expectations for Chemistry.

ADVANCED CHEMISTRY (not offered in 2017 - 2018) 1 CREDIT

****Prerequisite: Chemistry and Algebra II (May take A.P. Biology or Advanced Physics concurrently)****

Advanced Chemistry is designed to increase the college bound students' understanding of Chemistry and introduce them to advanced laboratory studies with an emphasis on electronic data collection and manipulation. Chemistry topics will include oxidation/reduction, qualitative and quantitative analysis, and advanced acid / base chemistry. The second semester of Advanced Chemistry is designed to further increase the college bound student's understanding of Chemistry and enhance laboratory skills with electronic data collection. Topics include introductory organic, introductory nuclear, reaction kinetics and advanced oxidation/reduction chemistry.

ENVIRONMENTAL SEMINAR (not offered in 2017 - 2018) 0.5 CREDIT

Environmental Seminar is a project based course where students work in groups to attain new knowledge about a topic and present it to the class. Topics covered will be renewable and non renewable resources, alternative energy, pollution, pollution mediation, and current environmental events.

ADVANCED GEOLOGY (offered in Fall of even numbered years) (not offered in 2017-2018) 1 CREDIT

Geology is designed to be an in depth study of both the physical and historical aspects of the geology of the Earth. Subject matter includes: Rocks and Minerals, Work of Water, Earthquakes and Earth's Interior, Plate Tectonics, Geologic Time, Earth History, Glaciers, and a special focus on the geologic history of Michigan. Students employ methods used by geoscientists to explore the Earth as well as provide a basic understanding of earth materials and geologic processes. Students passing the Advanced Geology Exam may be able to earn college credit at Calvin College, Central Michigan, Eastern Michigan, Grand Valley, Hope College, Lake Superior State, Michigan Technological University, Northern Michigan, University of Michigan-Dearborn, Western Michigan University or Wayne State. Other schools maybe be possible.

ASTRONOMY (offered in Fall of odd numbered years) 0.5 CREDIT

Students who elect Astronomy will experience our place in the universe, telescopes, our solar system, space and time, then and stellar evolution, our galaxy, and constellations. Several of the labs will be held in the evening to observe the night sky with telescopes.

FORENSIC SCIENCE I GRADES 10-12 0.5 CREDIT

Prerequisite: 1 credit in high school science.

Forensic Science will explore the history of forensic science, methods of investigating a crime scene, types of evidence, analysis of fingerprints, hair, fibers, drugs, and blood. Students will study agencies that offer forensic services, typical forensic labs and careers in forensic science. In this course students will investigate and solve 3 mock crime scenes.

FORENSIC SCIENCE II GRADES 10-12 0.5 CREDIT

****Prerequisite: Successful completion of Forensic Science I****

This course continues building on the base of forensic science knowledge the students gained in Forensic Science A. Course content will include: collection and preservation of evidence, advanced fingerprint lifting and ID, DNA, drugs and dependence, fire and explosives, advanced blood spatter, and use of maggots to determine time of death. Students will investigate and solve 3 mock crime scenes.

ADVANCED PLACEMENT (AP) BIOLOGY 1 CREDIT

****Prerequisite: "B" average or better in Biology and Advanced Chemistry (may take Advanced Chemistry concurrently)****

The A.P. Biology is designed to be the equivalent of a college introductory biology class as specified by the College Board Course and Lab Syllabus. After showing themselves qualified on the Advanced Placement examination, some students, as college freshmen, may receive college credit and be able to take upper level biology classes or they may have fulfilled a basic requirement for a laboratory science course. Topics and labs included will be those normally found in a college biology course for biology majors. Maturity and the ability to work independently are desirable attributes for students considering this class.

ADVANCED PLACEMENT (AP) CHEMISTRY 1 CREDIT

****Prerequisite: Successful completion of Advanced Chemistry and Algebra II****

A.P. Chemistry will give students at Sturgis High School the opportunity to receive advanced instruction and laboratory work in Chemistry. The concepts covered will be the A.P. Standards for Chemistry as outlined by the College Board, and may include: structure of matter, atomic theory and atomic structure, chemical bonding, nuclear chemistry, states of matter, solutions and reactions. After showing themselves qualified on the Advanced Placement examination, some students, as college freshmen, may receive college credit and be able to take upper level chemistry classes or they may have fulfilled a basic requirement for a laboratory science course.

ADVANCED PLACEMENT (AP) PHYSICS 2 (not offered in 2017 - 2018) 1 CREDIT

****Prerequisite: Successful completion of Advanced/AP Physics 1 and Algebra II****

AP Physics 2 focusses on the big ideas typically included in the second semester of an algebra based, introductory college-level physics sequence and provides students with enduring understanding to support future advanced course work in sciences. Through inquiry-based learning, students will develop critical thinking and reasoning skills, as defined by AP Science Practices. Topics covered include; Thermodynamics, Kinetic Theory, Fluids, Electric Fields, DC and RC circuits, Magnetism, Optics, Quantum Physics, and Nuclear Physics