SCIENCE

COURSE	CREDIT	OPEN TO	PREREQUISITE
Biology	1.0	9	None
Honors Biology	1.0	9	Enrollment in Honors Geometry or higher Math course or Honors English, and department recommendation
AP Biology	1.5	11-12	Biology and Chemistry
Physical Science	1.0	10-12	Biology
Chemistry	1.0	10-12	Biology and Algebra 1
Honors Chemistry	1.0	10	Honors Biology or Regular Biology, Algebra 1, or department recommendation
AP Chemistry	1.5	11-12	Chemistry or Honors Chemistry, and Algebra 2
Earth Science	1.0	10-12	Biology
Physics	1.0	10-12	Biology
Honors Physics	1.0	10-12	Algebra 2, Honors Biology or Regular Biology, or department recommendation
AP Physics 1	1.0	11-12	Physics or Honors Physics, and Algebra 2
AP Physics 2	1.0	11-12	AP Physics 1
Zoology	0.5	9-12	None
Honors Anatomy/Physiology	1.0	11-12	Biology or Honors Biology, and Chemistry or Honors Chemistry
Astronomy	0.5	11-12	None
AP Environmental Science	1.0	10-12	Chemistry or Honors Chemistry or department recommendation
STEM Inquiry and Research	1.0	10-12	Biology and Algebra 1
Nanotechnology and Research	1.0	10-12	Biology and Algebra 1

BIOLOGY Prerequisite: None Open to: Grade 9 Length: 2 semesters Credits: 1.0 Course Number: SC1200, SC1300, SC1500	Biology emphasizes reading comprehension, data analysis, practical experimentation, hypothesis formulation, data collection, problem solving, and critical thinking as they relate to the life sciences. Areas of study include genetics, cell structure, photosynthesis, respiration, ecology, microbiology, botany and zoology. This course is aligned to the Next Generation Science Standards. It is also offered in a bilingual (Spanish) format.

HONORS BIOLOGY Prerequisite: Enrolled in Honors Geometry or higher Math course or Honors English, and department recommendation Open to: Grade 9 Length: 2 semesters Credits: 1.0 Course Number: SC1900	Honors Biology emphasizes reading comprehension, data analysis, practical experimentation, hypothesis formulation, data collection, problem solving, and critical thinking as they relate to the life sciences. Genetics, cell structure, photosynthesis, respiration, ecology, microbiology, botany, zoology, and other topics are studied and integrated. The knowledge and concepts in Honors Biology are studied in greater depth than in Biology. This course is aligned to the Next Generation Science Standards

AP BIOLOGY Prerequisite: Biology and Chemistry Open to: Grades 11-12 Length: 2 semesters Credits: 1.5 Course Number: SC5000 **The class meets for 1.5 periods each day and will be matched up with a lunch period**	AP Biology is a college level class that focuses upon how both the Earth and the organisms that live on it have changed over time, as well as on the basic facts and ideas necessary to answer that question. Topics of study include cellular biology, energetics, evolution, ecology, genetics, genetic technology, animal structure and function, plant structure and function. These concepts will be taught utilizing a lecture/discussion based curriculum which includes advanced lab techniques, independent projects, directed practice, and student research. Additional assignments over the summer and during the first term may be required. **The class meets for 1.5 periods each day and will be matched up with a lunch period.** **It is highly recommended that all students in an Advanced Placement course take the Advanced Placement Exam offered each May by the College Board.*

PHYSICAL SCIENCE Prerequisite: Biology Open to: Grades 10-12 Length: 2 semesters Credits: 1.0 Course Number: SC3600, SC3630	Physical Science is a lab science course designed to give students an introduction to fundamental principles of energy through the perspective of chemistry and physics. An emphasis on experimental design, scientific inquiry, and data analysis allows students to improve lab techniques and problem solving skills. Connections to relevant societal and technological issues are explored. The course is aligned to the Next Generation Science Standards. The course is accepted as an ACT core course and is considered a college preparatory course.

CHEMISTRY Prerequisite: Biology and Algebra 1 Open to: Grades 10-12 Length: 2 semesters Credits: 1.0 Course Number: SC2100, SC2200, SC2030, SC2500	Chemistry focuses on experimental design, scientific inquiry, data analysis, mathematical calculation, and scientific reading. These skills are developed through the study of properties of matter, atomic structure, chemical formulas, chemical reactions, periodic properties of elements, chemical bonding, acid/base chemistry, and the behavior of atomic particles in accordance with Kinetic Theory of Matter. Students write formal lab reports. Connections to relevant societal and technological issues are emphasized. This course is aligned to the Next Generation Science Standards. It is also offered in a bilingual (Spanish) format.

HONORS CHEMISTRY Prerequisite: Algebra 1, Honors Biology or Regular Biology, or department recommendation Open to: Grade 10 Length: 2 semesters Credits: 1.0 Course Number: SC2900	Honors Chemistry focuses on experimental design, scientific inquiry, data analysis, mathematical calculation, and scientific reading. These skills are developed through the study of energy, properties of matter, atomic structure, chemical formulas, chemical reactions, periodic properties of elements, chemical bonding, acid/base chemistry, behaviors of solutions, cause/effect relationships of chemical equilibrium, and the behavior of atomic particles in accordance with Kinetic Theory of Matter. Students write formal lab reports. Connections to relevant societal and technological issues are emphasized. This course addresses topics in more depth than in Chemistry. This course is aligned to the Next Generation Science Standards.
AP CHEMISTRY Prerequisite: Chemistry or Honors Chemistry, and Algebra 2 Open to: Grades 11-12 Length: 2 semesters Credits: 1.5 Course Number: SC5100 **The class meets for 1.5 periods each day and will be matched up with a lunch period.**	AP Chemistry is the equivalent to a yearlong college level class. Students will be provided ample opportunity to attain a depth of understanding of fundamentals and some competence in solving chemical problems. As with any of the science department's courses, skills such as science reasoning, experimental design, laboratory procedures and problem solving are integrated and developed through a study of chemistry. However, the emphasis lies in preparation for the AP Chemistry test where the knowledge and skills are taken to a higher level of application. Among the topics are atomic structure, chemical bonding, gas laws, solids and liquids, solutions, reaction types, stoichiometry, equilibrium, chemical kinetics, thermodynamics, descriptive chemistry and laboratory skills. There is an emphasis on chemical calculations throughout the content, including attention to significant figures, precision and critical analysis of results. **The class meets for 1.5 periods each day and will be matched up with a lunch period.** **It is highly recommended that all students in an Advanced Placement course take the Advanced Placement Exam offered each May by the College Board.*
EARTH SCIENCE Prerequisite: Biology Open to: Grades 10-12 Length: 2 semesters Credits: 1.0 Course Number: SC2200, SC2220, SC2230	Earth Science is a lab oriented course that counts towards the 3.0 science credit graduation requirement. Students will study major units in astronomy, geology, meteorology, and physical geography. This course is aligned to the Next Generation Science Standards. The course is accepted as an ACT core course and is considered a college preparatory course.
PHYSICS Prerequisite: Biology and Algebra 1 Open to: Grades 10-12 Length: 2 semesters	Physics focuses on the attainment of knowledge and understanding of fundamental physics principles. Skills in science reasoning, experimental design, laboratory procedures, and problem solving are integrated and developed through a study of physics topics, including linear and rotational mechanics, waves, electricity, and

Credits: 1.0 Course Number: SC3100, SC3200, SC3500	magnetism. This course is aligned to the Next Generation Science Standards.

HONORS PHYSICS Prerequisite: Algebra 2 and Honors Biology or Regular Biology, or department recommendation Open to: Grades 10-12 Length: 2 semesters Credit: 1.0 Course Number: SC3900	Honors Physics focuses on the attainment of knowledge and understanding of fundamental physics principles and their mathematical descriptions. Skills in science reasoning, experimental design, laboratory procedures and problem solving are integrated and developed through a study of physics topics. The topics include linear and rotational mechanics, waves, electricity, and magnetism. Basic trigonometry is applied in this course.

AP PHYSICS 1 Prerequisite: Physics or Honors Physics and Algebra 2 Open to: Grades 11-12 Length: 2 semesters Credits: 1.0 Course Number: SC5400	AP Physics 1 is equivalent to first semester a college course in algebra based physics that is broader and more highly specialized than in previous physics courses. Skills in science reasoning, experimental design, laboratory procedures, and problem solving are integrated and developed through a study of physics topics. Students are challenged to extend what they learn to solve problems of various levels of structure and depth. This course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy and power, and mechanical waves and sound. It will also introduce electrical circuits. Strong Algebra and basic trigonometry skills are recommended as prerequisites. **It is highly recommended that all students in an Advanced Placement course take the Advanced Placement Exam offered each May by the College Board.*

AP PHYSICS 2 Prerequisite: AP Physics 1 Open to: Grades 11-12 Length: 2 semesters Credits: 1.0 Course Number: SC5500	AP Physics 2 is a equivalent to second semester college course in algebra based physics that is broader and more highly specialized than in previous physics courses. Skills in science reasoning, experimental design, laboratory procedures, and problem solving are integrated and developed through a study of physics topics. Students are challenged to extend what they learn to solve problems of various levels of structure and depth. This course covers fluid dynamics, thermodynamics, electricity and magnetism, optics, and atomic and nuclear physics. Strong Algebra and basic trigonometry skills are recommended as prerequisites. **It is highly recommended that all students in an Advanced Placement course take the Advanced Placement Exam offered each May by the College Board.*

ZOOLOGY Prerequisite: None	Zoology focuses on animal taxonomy, animal anatomy/physiology, animal development, and animal behavior. The course will emphasize basic life science

Open to: Grades 9-12 Length: 1 semester Credits: 0.5 Course Number: SC6000	laboratory skills and techniques. It can be taken before or after Biology. **Animal dissection is a required part of the laboratory experience**. This course is a science elective and does not fulfill the Biology requirement.

HONORS ANATOMY AND PHYSIOLOGY Prerequisite: Biology and Chemistry Open to: Grades 11-12 Length: 2 semesters Credits: 1.0 Course Number: SC6500	Honors Anatomy and Physiology is designed for the student who has a special interest in human anatomy and physiology. Honors Anatomy and Physiology emphasizes problem solving, laboratory dissection, and research skills that are integrated and developed through a study of human body systems. This course is fast paced and intensive. The integumentary, skeletal, muscular, circulatory, respiratory, digestive, and excretory systems are examined in detail. Lab reports, dissection write-ups, term projects, and portfolio entries are an integral part of the student's experience. **Dissections are required**.

ASTRONOMY Prerequisite: None Open to: Grades 11-12 Length: 1 semester Credits: 0.5 Course Number: SC6200	Astronomy focuses on researching the historical developments in astronomy, examining the possible ways astronomy will change the world. Students will evaluate the forces that shaped our solar system, proper use of a star chart and telescope, and research space exploration. This course is aligned to the Next Generation Science Standards

AP ENVIRONMENTAL SCIENCE Prerequisite: Chemistry or Honors Chemistry or department recommendation Open to: Grades 10-12 Length: 2 semesters Credits: 1.0 Course Number: SC5300	AP Environmental Science is equivalent to one semester of a college course. AP Environmental Science provides students with the scientific principles, concepts, and methodologies required to do the following: understand the interrelationships of the natural world, identify and analyze environmental problems both natural and human-made, evaluate the relative risks associated with these problems both natural and human-made, and examine alternative solutions for resolving and/or preventing them. **It is highly recommended that all students in an Advanced Placement course take the Advanced Placement Exam offered each May by the College Board.*

NANOTECHNOLOGY AND RESEARCH Prerequisite: Biology and Algebra 1 Open to: Grades 10-12 Length: 2 semesters Credits: 1.0 Course Number: SC6600	During the first term students will learn and apply the protocols and scientific research in the context of laboratory experiences. Students will learn how to operate electron microscopes, atomic force microscopes and the theory about how they work. They will learn how materials' properties change at the nanotechnology level and how those properties are applied in our daily lives. As the students develop skills and techniques they will refine their own research questions they will investigate during the second term. The investigation will include designing original experiments to help answer their research questions. The students will share their research design and findings at the end of the course. This course meets the prerequisite for Independent STEM Inquiry and Research.

STEM INQUIRY AND RESEARCH Prerequisite: Biology and Algebra 1 Open to: Grades 10-12 Length: 2 semesters Credits: 1.0 Course Number: SC2700	During the first term students will learn and apply the protocols of scientific research in the context of laboratory experiences. The inquiry experiences will include topics from the STEM (Science, Technology, Engineering and Math) fields of Biology and the Physical Sciences. As the students develop skills and techniques they will refine their own questions they will research during the second term. The students will design original experiments to help answer their research questions. Students will share their research design and findings at the end of the second term. This course meets the prerequisite for Independent STEM Inquiry and Research.