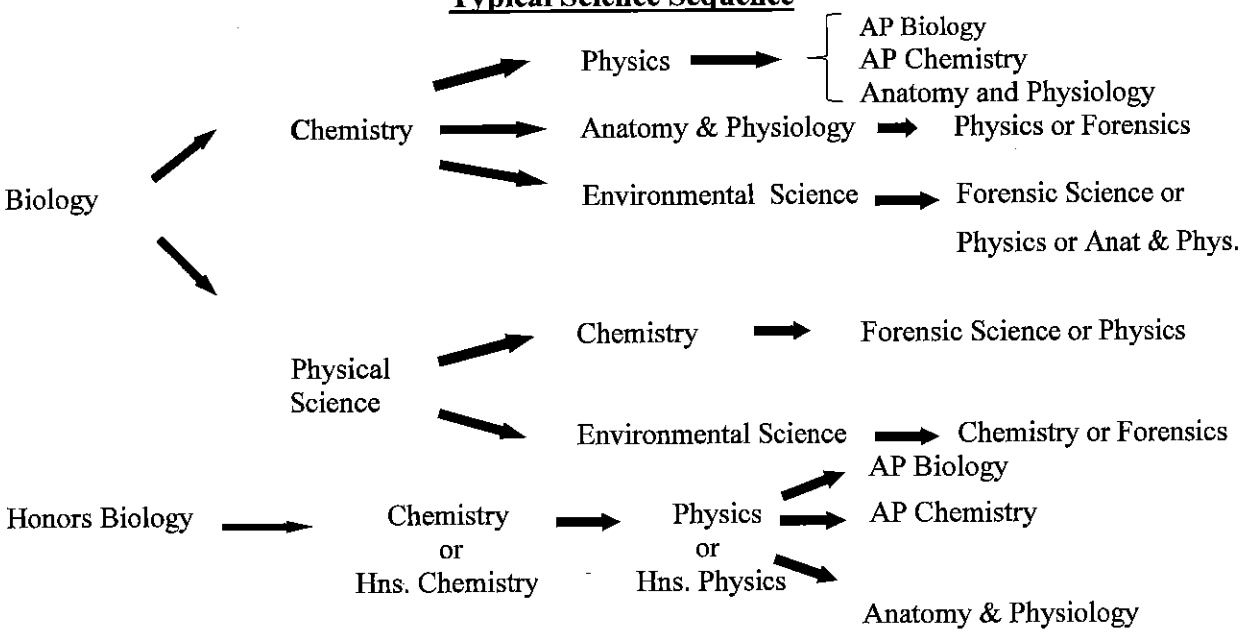
SCIENCE

Courses	Grades	Prerequisites
Biology	9	
Honors Biology (W)	9	Enrolled in Honors Math and Department Recommendation
Physical Science	10	
Chemistry	10, 11, 12	"C+" in Algebra I and Biology & Department Recommendation
Honors Chemistry (W)	10, 11	"A" in Biology and Algebra I, or "B" in Honors Biology
Environmental Science	11	
Forensic Science	12	Chemistry
ADVANCED ELECTIVES		
Physics	11, 12	"C" in Chemistry, completed/enrolled in Alg II and Department Recommendation
Honors Physics	11, 12	"A-"in Chemistry or "B-" in Honors Chemistry and Department Recommendation
Anatomy & Physiology	11, 12	"B" in Biology, "C" in Chemistry and Department Recommendation
AP Biology (W)	12	"B" in Chemistry, Biology/Honors and Alg II; Physics, and Department Recommendation
AP Chemistry (W)	12	"B" in Chemistry and Algebra II; Physics and Department Recommendation
CCP Introduction to Ecology (W)	12	Chemistry, LCCC Criteria, Dept. Recommendation
CCP Chemistry and Society (W)	12	LCCC Criteria, Dept. Recommendation
CCP General, Organic, Biochemistry I (W)	12	Chemistry, LCCC Criteria, Dept. Recommendation
CCP General, Organic, Biochemistry II(W)	12	CCP General, Organic, Biochemistry I Chemistry, LCCC Criteria, Dept. Recommendation

*** ***With departmental approval, students may take 2 Sciences Junior and/or Senior year***

Typical Science Sequence



BIOLOGY

Code: #321 **Credit: 1**
Length: Year

Biology is a student centered, laboratory based course which guides students to a deeper understanding of the structure and nature of living systems. Biology unit topics include: Cell physiology which includes basic biochemistry, homeostasis, respiration, photosynthesis, protein synthesis, and cell reproduction; Genetics including Mendelian genetics and its application to human genetics; and Microbiology including unicellular organisms, bacteria growth and reproduction. Studying Biology, students will learn value for all forms of life, helping them become better caretakers of the Earth.

HONORS BIOLOGY

Code: #325 **Credit: 1**
Length: Year **Prerequisite: Enrolled in Honors Math and Department Recommendation**

Honors Biology is designed for the above average freshman who would benefit from an accelerated science program. This course encourages students to think creatively and develop problem solving skills. The same unit topics covered in Biology will be covered in greater depth, including: Cell physiology which includes basic biochemistry, homeostasis, respiration, photosynthesis, protein synthesis, and cell reproduction; Genetics including Mendelian genetics and its application to human genetics; Microbiology including unicellular organisms, bacteria growth and reproduction; and Ecology. Significant laboratory time is used in the achievement of course objectives. Students who take Honors Biology should proceed to take Chemistry/Honors and Physics/Honors.

CHEMISTRY

Code: #331 **Credit: 1**
Length: Year **Prerequisite: C+ in Algebra I and Biology Department Recommendation**

In Chemistry, the student will be actively engaged in learning the structure and behavior of matter at the particle level. This course is taught through a Modeling Instruction* curriculum. Students are actively involved in designing and performing laboratory experiments to collect evidence for the particle nature of matter. Unit topics include: particle models of matter, energy, atomic structure, reactions, stoichiometry, and patterns of the periodic table. Instructional units begin with demonstrations and experiments examining chemical phenomena. Students then analyze patterns in laboratory data, design models to explain the phenomena, and finally present and defend their conclusions to the class. A significant amount of mathematics is involved. This course fosters creative problem solving, the ability to design laboratory procedures and mathematical models, and the use of evidence to support hypotheses and explain observations.

HONORS CHEMISTRY

Code: #330 **Credit: 1**
Length: Year **Prerequisite: "A" in Biology and Algebra I or "B" in Honors Biology and Department Recommendation**

Honors Chemistry is designed for the above average student who would benefit from an accelerated science program. The same topics covered in Chemistry will be addressed in this course with greater depth. This course is taught through a Modeling Instruction* curriculum. Students are actively involved in designing and performing laboratory experiments to collect evidence for the particle nature of matter. Instructional units begin with demonstrations and experiments examining chemical phenomena. Students then analyze patterns in laboratory data, design models to explain the phenomena, and finally present and defend their conclusions to the class. This course fosters creative problem solving, the ability to design laboratory procedures and mathematical models, and the use of evidence to support hypotheses and explain observations. Several laboratory experiences in this course involve guided inquiry in which students create their own procedures under teacher supervision. A significant amount of mathematics is involved and it is recommended that students be in an Honors math course.

PHYSICAL SCIENCE

Code: #302C **Credit: 1**
Length: Year

In Physical Science, students will be developing and using models to represent physical phenomena. This course is taught through a Modeling Instruction* curriculum. Students are actively involved in conducting experiments, gathering evidence and data, and analyzing their results to develop mathematical models. Unit topics include: two-dimensional kinematics, balanced and unbalanced forces, energy, structure and properties of matter, chemical reactions, and astronomy.

ENVIRONMENTAL SCIENCE

Code: #360 **Credit: 1**
Length: Year

Environmental Science will allow the student to analyze the environment in which he or she lives. Major topics will include environmental inter-relationships, environmental interactions, energy transfer and use, the effects of pollution, and policy decisions that are made regarding the environment. Students are encouraged to collaborate and research several topics related to environmental concerns. An integral component of this course is inquiry based laboratory experience and project based assessments.

FORENSIC SCIENCE

Code: #347
Length: Year

Credit: 1
Prerequisite: Department Recommendation

In this elective science course, students will have the opportunity to explore scientific principles while analyzing physical evidence from crime scenes and examining case studies. Students will evaluate data, draw logical conclusions, and formulate probable solutions. Technology will be utilized to evaluate crime scenes and communicate the results. Forensic science integrates concepts from chemistry, physics, biology, earth science, and anatomy.

PHYSICS

Code: #341
Length: Year

Credit: 1
Prerequisite: C in Chemistry

Physics is primarily a mechanics based course. The topics of electricity and magnetism will also be addressed. This course is taught through a Modeling Instruction* curriculum. Students will observe physical phenomena at the beginning of each unit and then test their own observations in a lab setting, creating graphical and mathematical models from collected data. Students will then come together, present, compare, and defend their models in class discussions. The end result is a known physical law. Strong emphasis is placed on conceptual understanding of physical laws and scientific inquiry. This course requires collaboration skills and basic understanding of algebraic and trigonometric functions.

HONORS PHYSICS

Code: #343
Length: Year

Credit: 1
Prerequisite: A- in Chemistry or
B- in Honors Chemistry and
Department Recommendation

Honors Physics is designed for the above average student who would benefit from an accelerated science program. The same topics covered in Physics will be addressed in this course with greater depth including mechanics, electricity, and magnetism. This course is taught through a Modeling Instruction* curriculum. Students will observe physical phenomena at the beginning of each unit and then test their own observations in a lab setting, creating graphical and mathematical models from collected data. Students will then come together, present, compare, and defend their models in class discussions. The end result is a known physical law. Strong emphasis is placed on conceptual understanding of physical laws and scientific inquiry. This course requires collaboration skills and a solid understanding of algebraic and trigonometric functions. Elements of basic calculus are used infrequently.

ANATOMY AND PHYSIOLOGY

Code: #365B
Length: Year

Credit: 1
Prerequisite: B in Biology, C in Chemistry and Department Recommendation

Anatomy and Physiology builds on the knowledge acquired in biology and expands into human anatomy and physiology. Students will study the various organ systems of the human body, their structures and functions, and how organ systems interact to maintain homeostasis. Study will be enhanced by many laboratory explorations and multiple dissections are required. This course is recommended for students who have a strong interest in biological or medical fields.

ADVANCED PLACEMENT BIOLOGY

Code: #327
Length: Year

Credit: 1
Prerequisite: B in Alg II, Chemistry/ Honors Chemistry, B in Biology/Honors Biology; Physics, and Department Recommendation

Advanced Placement Biology is a college level biology course. This advanced course is intended for future science majors and pre-med students. This course is structured around the four big ideas articulated in the AP Biology curriculum framework provided by the College Board: evolution, cellular processes including energy and communication, genetics and information transfer, and interactions. Essential to this course is a conceptual understanding of science as a process rather than the accumulation of facts, the unifying themes in biology, application of biological knowledge, and critical thinking of environmental, social, and experimental concerns. Experience in scientific inquiry, inquiry-based laboratory work, and independent study will be a significant component of this course. Upon completion of this course, the student may elect to take the AP Biology exam.

ADVANCED PLACEMENT CHEMISTRY

Code: #333
Length: Year

Credit: 1
Prerequisite: B in Alg II, Chemistry/Honors Chemistry; Physics, and Department Recommendation

AP Chemistry is a college level chemistry course. This advanced course is intended for future science, engineering, and pre-medical students. This course is structured around the six big ideas articulated in the AP Chemistry curriculum framework provided by the College Board: structure of matter, properties of matter (characteristics, states, and forces of attraction), chemical reactions (including acid/base and redox reactions), kinetics, thermodynamics, and equilibrium. Laboratory work will be a significant part of the course, including a strong emphasis on scientific inquiry and data analysis. This rigor and pace of this class is consistent with college courses and students are expected to actively participate in class discussions, laboratory investigations, and online assignments associated with the textbook. Online summer assignments are required. Upon completion of this course, the student may elect to take the AP Chemistry exam.

CCP INTRODUCTION TO ECOLOGY

Code: #CCPBIOG155
Length: Semester

Credit: 0.5
Prerequisite: Chemistry, Meet LCCC Criteria and Department Recommendation

This course provides a survey of environmental issues and highlights interaction between human beings and the ecosystem. It also addresses the economic, social and environmental dimensions of sustainable development. This course may include a service learning component.

CCP CHEMISTRY AND SOCIETY

Code: #CCPCHMY155
Length: Semester
Credit: 0.5
Prerequisite: Chemistry, Meet LCCC Criteria and Department Recommendation

This course is designed for non-science and non-allied health and nursing students. It is an introduction to chemistry presented in the context of current world problems (i.e. ozone depletion, acid rain, global warming) and commercial products (foods, drugs, plastics).

CCP GENERAL, ORGANIC, and BIOCHEMISTRY I

Code: #CCPCHMY161
Length: Semester
Credit: 0.5
Prerequisite: Chemistry, Meet LCCC Criteria and Department Recommendation

This course is designed to give the allied health student an understanding of and appreciation for general chemistry. It includes atomic and molecular structure, intermolecular and intramolecular forces, properties of matter, states of matter, solutions, principals of reactions (including acid-base, redox) and nuclear chemistry. Laboratory required. A special fee will be assessed.

CCP GENERAL, ORGANIC, and BIOCHEMISTRY II

Code: #CCPCHMY162
Length: Semester
Credit: 0.5
Prerequisite: Chemistry, Meet LCCC Criteria, Completion of CCP General, Organic, and Biochemistry II and Department Recommendation

This course is a continuation of CCP General, Organic, and Biochemistry I with an emphasis on organic and biochemistry. The topics include nomenclature; structure classification and typical reactions of organic compounds; and properties, synthesis and metabolism of carbohydrates, lipids, nucleic acids and proteins. The role of enzymes, hormones, vitamins and drugs are also discussed. Laboratory required. A special fee will be assessed.