SCIENCE

Students are required to earn three science credits in order to graduate from high school: one physical science, one life science, and one elective science. The following recommended courses of study are designed to build in the Charlotte County eighth grade Science curriculum and to prepare students for the Science FCAT. In order to predict if students are prepared for the Science FCAT, all sophomores will take the Charlotte County District Science test. Sophomores demonstrating proficiency on this exam will be allowed to select the elective Science class of their choice for their junior year. Students failing to demonstrate proficiency on this exam will be scheduled for an appropriate Science elective to best correct the deficiencies before taking the Science FCAT as juniors. All Science electives are designed to reinforce an appropriate portion of the major scientific principals tested on the Science FCAT.

Recommended Course of Study for General Students: It is highly recommended that college bound general students complete four Science courses. To be best prepared for college admission and competition for scholarships, students are strongly encouraged to enroll in Integrated Science, Biology, Chemistry, and Physics.

9th grade:	Integrated Science
10th grade:	Biology I
11th grade:	Science Elective Chemistry is recommended for college bound students
12th grade:	Optional Science Elective Physics is recommended for college bound students

The science program is directed towards meeting the science education needs of Florida's science students. These needs range from the development of scientific literacy to preparation for careers in science. The program provides experiences for students to develop and apply skills in critical thinking and problem solving, to acquire knowledge and understanding about themselves and the natural world in which they live, to make responsible decisions concerning science-related issues in society, and to learn about career opportunities in science and technology. Students will experience science instruction which is appropriate for high school students and which will communicate the wonder and the excitement of science, both in the classroom and in the laboratory.

2001310 INTEGRATED SCIENCE Grade 9
1 credit
Will meet graduation requirements for physical science.

The purpose of this course is to provide students with the knowledge and skills needed to be successful in more advanced high school science courses. In combination with a Biology class in tenth grade, the students will be prepared for the science FCAT. The content will include topics from Earth/Space Science, Physics, and Chemistry. This is an inquiry based class so the processes and methods of scientific exploration will be emphasized with a variety of laboratory activities.

2000310 BIOLOGY I Grade 9
1 credit
Will meet graduation requirements for life science.

The content will include: scientific method, scientific measurement, laboratory safety and use of apparatus, cell biology, cell reproduction, basic principles of genetics, biological changes through time, classification and taxonomy, microbiology, structure and function of plants, structure and function of animals, structure and function of the human body, and ecological relationships. Any dissection activities are voluntary, however, general knowledge gained through dissection is the responsibility of all students.

2000320 BIOLOGY HONORS I Grade 9

1 credit

Will meet graduation requirements for life science.
Prerequisites: See Honors Criteria.

The purpose of this course is to provide students with advanced exploratory experiences and activities in the fundamental concepts of life. This course expands the biological concepts that were introduced in the elementary and the middle school and presents additional facts, concepts, and generalizations. Any dissection activities are voluntary. However, general knowledge of the material presented is the responsibility of all students. All students are required to complete an extensive, detailed project for submission into the science fair. *(Sequence to Honors Chemistry and Physics.)* This course is designed to prepare the student for enrollment and success in an Advanced Placement course as well as Dual Credit/Dual Enrollment courses.

2003340 CHEMISTRY I Grades 10 - 12

1 credit

Prerequisite: Successful completion of Biology I and a grade of "C" or higher in Algebra I or its equivalent.
Will meet graduation requirements for physical science.

This course is designed to introduce many important chemistry topics by emphasizing real world problems and applications. The topics will include: classification and structure of matter; atomic theory; periodic table; bonding; chemical formulas; chemical reactions and balanced equations; behavior of gases; physical changes; acids, bases and salts; and energy associated with physical and chemical changes.

2003350 CHEMISTRY I HONORS Grades 10 - 12

1 credit

Prerequisites: See Honors Criteria
Will meet graduation requirements for physical science.

Honors Chemistry is a more traditional chemistry course than Chemistry I. It is designed to prepare students for the rigors of AP Chemistry or for college chemistry at a major university. The topics include measurement and calculations, Atomic Structure, The Periodic Law, Nuclear Chemistry, Chemical Reactions (including redox reactions), Stoichiometry, Phases of Matter, Solutions, and an introduction to Kinetics and Equilibrium (including acid-base reactions). This course is designed to prepare the student for enrollment and success in an Advanced Placement course as well as Dual Credit/Dual Enrollment courses.

2003380 PHYSICS I Grades 11 - 12

1 credit

Prerequisites: Successful completion of Biology I, a grade of "C" or higher in Algebra I or its equivalent, and successful completion or concurrent registration in Algebra I.
Will meet graduation requirements for physical science.

The purpose of this course is to provide students with an introductory study of the theories and laws governing the interaction of matter, energy, and the forces of nature. The content will include: kinematics, dynamics, energy, work and power, heat and thermodynamics, wave characteristics, light, electricity, magnetism, and nuclear physics and sound.

2003390 HONORS PHYSICS Grades 11 - 12
1 credit
Prerequisites: See Honors Criteria
Will meet Florida Academic Scholars requirements for physics.

Honors Physics is structured to have the student successfully understand physics upon two levels of understanding. The first is the conceptual level. The second is the more precise expression of the concepts. This will be done with the use of mathematical equations, development of data using correct laboratory procedures and the analysis of the data. Simulated models will be a new addition to the course.

The content will include, but not be limited took, the nature of physics and kinematics, dynamics, work and energy, momentum, rotational motion, gravity, wave theory, temperature and heat, the gas laws, electricity, magnetism, sound and quantum mechanics.

2000350 ANATOMY AND PHYSIOLOGY Grades 11 - 12
1 credit
Prerequisite: Successful completion of Biology I or Honors Biology
Will meet graduation requirements for life science.

The purpose of this course is to provide students with activities in the structures and function of the human body. The content includes, but is not limited to, anatomical terminology; cells and tissues; organ systems such as integumentary, skeletal, muscular, nervous, special sensory, endocrine, circulatory, respiratory, digestive, urinary and reproductive; homeostatic mechanisms; disease process and immune response; inheritance; and molecular, cellular, organisms, mutagenic, and genetic disorders.

Laboratory activities are required. Laboratory investigations of selected topics in the content area which also include the use of scientific method, measurement, laboratory apparatus, and safety are an integral part of the course.

2000360 ANATOMY AND PHYSIOLOGY HONORS Grades 11 - 12
1 credit
Prerequisite: See Honors Criteria

The emphasis of this course is on human anatomy and physiology for those students interested in pursuing a career in a health related profession. The course content includes, but is not limited to, the same content as Anatomy and Physiology I, but there is greater emphasis on the biochemical principals associated with human physiology. Many systems of study are accompanied by histological examination, gross dissection, and interactive labs and demonstrations. Associated pathologies for each system will also be studied. **Dissection is a mandatory component of the Honors Anatomy and Physiology lab program.**

2002500 MARINE SCIENCE I Grades 11 - 12
1 credit
Will meet graduation requirements for life science.

The purpose of this course is to provide an overview of the marine environment. The content should include, but not be limited to the following: the nature of science; the origins of the oceans; the chemical, physical, and geological aspects of the marine environment; ecology of various seas zones; marine communities; the diversity of marine organisms; characteristics of major marine ecosystems; characteristics of major marine phyla/divisions; and the interrelationship between man and the ocean.

2001340 ENVIRONMENTAL SCIENCE Grades 11 - 12
1 credit
Will meet graduation requirements for life or physical science.

This course will provide the student with a study of man's interaction with the environment. Content will include: types of pollution, conservation practices, environmental planning and policies, ecology principles, and major forms of energy. Each topic will focus on how they affect the state of Florida.

2000340 ADVANCED PLACEMENT BIOLOGY Grades 11 - 12
1 credit.
Prerequisites: See Honors Criteria

The purpose of this course is to provide a study of the facts, principles, and processes of biology, and the collection, interpretation, and formulation of hypotheses from available data. The AP Biology course is designed to be the equivalent of a college introductory biology course usually taken by biology majors during their first year. This course aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology.

Major topics for the AP exam include Molecules and Cells (25%); Heredity and Evolution (25%); and Organisms and Populations (50%). Primary emphasis in Advanced Placement Biology is on developing an understanding of the concepts rather than memorizing terms and technical details. Essential to this conceptual understanding are the following: a grasp of science as a process rather than as an accumulation of facts; personal experience in scientific inquiry; recognition of unifying themes that integrate the major topics of biology; and application of biological knowledge and critical thinking to environmental and social concerns. Students are expected to sit for the AP exam in May. More information about the AP program can be found at www.collegeboard.com/ap.

2003370 CHEMISTRY II/ADVANCED PLACEMENT CHEMISTRY Grades 11 - 12
1 credit
Prerequisites: See Honors Criteria

In order to accommodate the time required to complete the lab program and the problems solving sessions, Advanced Placement Chemistry is offered during the fourth hour block for the entire school year. Since students may only receive credit for taking the class once, the course is paired with Chemistry II, another college level course, so that students can receive college level credit for both semesters. The main units of study include chemical foundations, stoichiometry and reaction types, thermochemistry, chemical bonding, phases of matter, solutions, gas laws, kinetics, equilibrium, applications of aqueous equilibria, and electrochemistry. Students are expected to sit for the AP exam in May. More information about the AP program can be found at www.collegeboard.com/ap.

2003420 *PHYSICS II*/ADVANCED PLACEMENT PHYSICS B Grade 12
1 credit
Prerequisites: See Honors Criteria

This is a college level physics course for second year physics students only. Through discussions, problem solving, and laboratory activities, the topics covered in Honors Physics will be reviewed and

studied in greater detail. Students are expected to sit for the AP exam in May. More information about the AP program can be found at www.collegeboard.com/ap.

BSC 1050C Environmental Biology: Our Global Environment Grade 11-12 (1st semester) 1/2 credit

Prerequisite: Qualifying ACT/SAT/CPT scores and qualifying GPA, paired with BSC 1051C. A grade below "C" will not receive college credit. See Honors Criteria for additional information.

This class, designed for non-science majors, approaches topics in environmental science by studying the impact of humans. Contemporary ecological issues are explored in relation to problems of local, regional, national and global concerns. The format of the class involves combined lecture, lab and field trip activities including discussions and debates of local problems, as well as national and global issues.

BSC 1051C Environmental Biology: Southwest Florida Ecosystems Grade 11-12 (1st semester) 1/2 credit

Prerequisite: Qualifying ACT/SAT/CPT scores and qualifying GPA. A grade below "C" will not receive college credit. See Honors Criteria for additional information.

This class, designed for non-science majors, studies the natural processes, field study methods and the identification of biotic and abiotic components of the major ecosystems of Southwest Florida. The format of the class involves combined lecture, lab and field trip activities.