

## COURSE DESCRIPTIONS - SCIENCE

### HONORS BIOLOGY - 0400

*Grade 9  
REQUIRED (1 credit)*

**Purpose:** This course is designed to help the student understand the biological world around him/her. It develops the student's ability to think and allows him/her to apply basic biological principles to real life situations. This course is designed for highly motivated students who possess strong academic skills.

**Course Description:** This course is designed to provide conceptual development and insight into biological processes through verification and inquiry. It is primarily for students who are interested in pursuing science and/or technological careers. Topics will be covered in depth and independent work is required of the students.

**Requirements:** Tests, quizzes, lab reports, homework, special projects, and presentation are required. All students will take the final exam.

**Prerequisites:** This program is designed for the high achieving science student and is recommended for the student with a strong interest in the sciences. The student must have completed 8th grade science with at least a 93%. The 8th grade science teacher's recommendation is mandatory. (See Honors Entrance Requirements.)

### BIOLOGY - 0402

*Grades 9, 10  
REQUIRED (1 credit)*

**Purpose:** This course is designed to give the student a practical view of the living world in which he/she is an integral entity.

**Course Description:** This course examines basic biological principles and concepts. Science will be treated as an inquiry based process; therefore, lab will be an integral part of the course work. This course uses critical thinking to enhance a student's awareness of biological concepts and how they apply to real life.

**Requirements:** Tests, quizzes, homework, lab assignments, and special projects.

**Prerequisites:** None

### HONORS ANATOMY AND PHYSIOLOGY - 0412

*Grades 11, 12  
ELECTIVE (1 credit)*

**Purpose:** This honors level course is designed particularly for the student who plans to pursue a health related course of study after high school.

**Course Description:** This course is a study of the organization and function of human body systems. Emphasis is placed on the homeostatic functioning of organ systems, organs, and tissues of living beings. The course is designed for the student who intends to pursue a postgraduate health related course of study. Considerable time will be spent in laboratory work concentrating on dissection.

**Requirements:** Tests and oral reports will be required. Each student is expected to dissect a cat. Lab practical will be given on vertebrate anatomy. All students will take the final exam.

**Prerequisites:** Completion of Biology and Chemistry with at least an 85% for final grades

**HONORS CHEMISTRY - 0404**

*Grades 10, 11, 12  
REQUIRED (1 credit)*

**Purpose:** This course is designed to give the student who is planning to major in science/engineering a very challenging course in chemistry and to acquaint the student with an approach to chemistry from the point of view of the working scientist.

**Course Description:** This course approaches chemistry from the point of view of a working scientist. Classroom work will develop in depth the basic concepts of chemistry such as atomic structure, symbols and formulas, mathematical relationships and chemical reactions. It is primarily for students who are interested in pursuing science and/or technological careers. Laboratory exercises will focus on discovery and verification. They are designed to provide for inquiry and hands-on activity. Students will also be required to design, investigate experimentally and report on an area of personal interest in science.

**Requirements:** Each student will complete work assigned and demonstrate a knowledge of the chemistry through tests and classwork. Lab reports will be required. Students will be required to conduct an quantitative investigation of a problem-solving nature and to write a research paper on the results of the investigation. Responsible for reading and summarizing current event article found in journals, newspapers, magazines, etc. All students will take the final exam.

**Prerequisites:** The student must have completed Honors Biology with at least an 85% average or Biology with a 90% *and* Algebra II with at least an 85% average or Algebra I with a 90%. The student also needs the recommendation of his/her present science teacher.

**CHEMISTRY - 0406**

*Grades 10, 11, 12  
REQUIRED (1 credit)*

**Purpose:** This course is designed to give the student an introduction to chemistry providing him/her with the background needed for further study in chemistry. This course meets college entrance requirements as a lab science.

**Course Description:** This course provides the student with an introduction to chemistry with an emphasis on real life. Classroom work will introduce the basic concepts of chemistry such as atomic structure, symbols and formulas, mathematical relationships, chemical reactions, and organic chemistry. The student will perform laboratory work designed to give the student experience in developing critical thinking skills.

**Requirements:** Each student will complete work assigned and demonstrate a knowledge of chemistry through tests and homework assignments. Lab reports will be required.

**Prerequisites:** Completion of Biology and Algebra I with at least a 77% for a final grade.

**APPLIED CHEMISTRY - 0407**

*Grades 10, 11, 12  
REQUIRED (1 credit)*

**Purpose:** This course is designed for the student who does not intend to study science after high school. It is not intended to limit the further study of chemistry, but to improve skills necessary for success in an academic, math-oriented chemistry class.

**Course Description:** This course is designed to provide students with basic chemistry knowledge necessary in their personal and professional lives, as well as knowledge necessary for making informed decisions about issues involving science and technology.

**Requirements:** Each student will be required to complete lab activities, lab reports and written homework. Quizzes, tests, mid-term and final exams will also be used to monitor student progress.

**Prerequisites:** Completion of Biology with a passing grade.

#### **PHYSICS - 0410**

**Grades 11, 12  
REQUIRED (1 credit)**

**Purpose:** The purpose of this course is to provide students with knowledge of the physical laws of the universe. This course is intended for students who will not be majoring in science or technology in college.

**Course Description:** This course uses the physical laws governing the universe to provide the student with necessary knowledge to pursue his/her post secondary interest. The student will perform laboratory work designed to give the student experience in developing critical thinking skills.

**Requirements:** Regular homework and laboratory activities will be an integral part of the course. Test and quizzes will check for understanding.

**Prerequisites:** Completion of two years of academic math (geometry and algebra) with at least a 77% average.

#### **APPLIED PHYSICS - 0411**

**Grades 11, 12  
REQUIRED (1 credit)**

**Purpose:** This course is designed for the student who does not intend to study science after high school. It is a hands on approach to physics. The concepts being taught apply to real-world situations.

**Course Description:** This course provides hands on integration of physical laws with critical thinking skills needed for students that are interested in pursuing careers other than post secondary education. Students will be required to use math skills and laboratory techniques to investigate selected physical topics that tend to increase their knowledge and understanding of real-life situations.

**Requirements:** Each student will be required to complete lab activities, lab reports and written homework. The students must have a calculator. Students will also be evaluated by quizzes and tests. There will also be computer activities that are part of the student's grade.

**Prerequisites:** Completion of Applied Math I and Applied Algebra with a passing grade. Completion of Applied Biology/Biology and Applied Chemistry/Chemistry with passing grades. This course is not intended for students who are going to college.

**ALL STUDENTS MUST BE APPROVED BY THE PHYSICS TEACHER!!**

## HONORS PHYSICS - 0408

**Grades 11, 12**  
**REQUIRED (1 credit)**

**Purpose:** This class provides students with a background in the physical laws governing our universe and prepares students for college level courses in science and technology.

**Course Description:** This course provides a background in the physical laws governing the universe for students who are interested in pursuing scientific and technological fields of study. Students will be required to use critical thinking skills as they focus on independent projects to further develop their understanding of physical concepts.

**Requirements:** Regular homework and laboratory activities will be an integral part of the course. Additional projects and reports may be assigned. There will be chapter tests, unit tests, and a final test. All students will take the final exam.

**Prerequisites:** Completion of two years of academic mathematics (geometry and algebra) with at least a B average.

## ADVANCED PLACEMENT BIOLOGY – 0401

*To be offered 2007-2008*

**Grades 11, 12**  
**ELECTIVE (1 credit)**

**Purpose:** This course is designed to be the equivalent of a (2) semester college introductory biology course usually taken by biology majors during their first year, with the possibility of obtaining (8) college credits upon successful completion of the AP exam.

**Course Description:** Advanced Placement Biology includes topics in ecology, molecular biology, genetics and evolution as well as a survey of each of the five taxonomic kingdoms. The AP course differs significantly from the usual first high school course in biology with respect to the kind of textbook used, the range and depth of topics covered, the kind of laboratory work done by students and the time and effort required of students.

**Requirements:** Laboratory activities will be an integral part of the course. The students will be expected to spend a large amount of time outside of class to complete reading assignments. Grades will be based almost entirely on exam and lab grades. Students are expected to take the Advanced Placement Biology exam. Completion of Honors Biology and Honors Chemistry with an 85% or higher or CP Biology and CP Chemistry with a 95% or higher is required. Completion of either trigonometry or statistics is strongly recommended. All students will take the final exam.

## ADVANCED PLACEMENT CHEMISTRY - 0405

*To be offered 2006-2007*

**Grades 11, 12**  
**ELECTIVE (1 credit)**

**Purpose:** The Advanced Placement Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first college year, with the possibility of obtaining college credit upon successful completion of the AP exam.

**Course Description:** Advanced Placement Chemistry should meet the objectives of a good college level general chemistry course. Students in such a course should attain a depth of

understanding of fundamentals and a reasonable competence in dealing with chemical problems.

**Requirements:** Seventy percent of the course will be devoted to class work and thirty percent will be devoted to laboratory experiences. Students must understand math and be willing to spend at least one hour studying for each hour of class time. Chapter tests and lab reports will be the primary determination of the course grade. Students are expected to take the Advanced Placement Chemistry exam.

**Prerequisites:** The Advanced Placement Chemistry course is designed to be taken only after the successful completion of a first course in high school chemistry with at least an 85% average. Physics must be taken previously or concurrently. The student must have also successfully completed at least one year of algebra with at least an 85% average, and have the recommendation of his/her chemistry teacher. All students will take the final exam.

### **ADVANCED PLACEMENT PHYSICS "B" - 0409**

**Grade 12  
ELECTIVE (1 credit)**

**Purpose:** The AP Physics course is designed to give students the opportunity to study physics at the college level with the possibility of obtaining college credit upon successful completion of the AP exam.

**Course Description:** AP Physics "B" includes topics in both classical and modern physics. Topics include mechanics, heat and thermodynamics, electricity and magnetism, waves and optics, and modern physics.

**Requirements:** Regular homework and lab activities will be an integral part of the course. Chapter tests, unit tests and the AP exam will be used as evaluation tools in addition to homework and labs. Students are expected to take the Advanced Placement Physics exam. All students will take the final exam. Students need to be approved by physics teacher.

**Prerequisites:** Completion of one year of chemistry, one year of physics, completion of mathematics through trigonometry, and approval of the physics teacher.

### **EARTH SPACE SCIENCE - 0415**

**Grades 10, 11, 12  
(1 credit)**

**Purpose:** This course is designed to allow students to study topics not covered in biology, chemistry, or physics in order to meet the state requirements. It is also designed to develop and reinforce science process skills in a variety of contexts.

**Description:** The course will examine plate tectonics, rock formations, types of rocks, geological processes, such as erosion and deposition, geological history, cloud formations, weather patterns, development of the solar system, constellation maps, and space topics. Class activities include basic scientific research, individual and small group projects, and outdoor and classroom lab activities.

**Requirements:** Regular homework and classroom exercises. Weather and astronomy journaling of observed events will be collected each grading period. Reading and reporting on current events related to Earth/Space. Chapter quizzes and unit test, as well as a final exam.

**Prerequisites:** Successful completion of Biology.