

SCIENCE DEPARTMENT

**301 INTSCI INTEGRATED SCIENCE (Fr) NCAA**

**All Year**

**1 credit**

This course will explore the individual science disciplines of astronomy, earth science, physics, and chemistry, in addition to the areas where the disciplines overlap. Areas of study include lab safety, lab equipment, the solar system, the universe, plate tectonics, rocks and minerals, motion, momentum and energy, matter, chemical bonds, and reactions. This course is designed to lay a good foundation for future science courses.

Student Activities: Students will conduct laboratory investigations, complete projects in model building and problem solving, view demonstrations, and apply mathematical concepts.

Student Evaluation: Tests, quizzes, written assignments, lab reports, projects, and semester exams

**320BIO BIOLOGY (Fr, Sophs) NCAA**

**All Year**

**1 credit**

Prerequisite: Placement by Administration or completion of both semesters of Integrated Science.

Students will examine the world of biology, and cover a wide range of concepts, including evolution, genetic continuity, biodiversity, regulatory processes, ecosystems, biological history, and the scientific method. Students will also examine how biology affects their everyday lives. Study will include both classroom and laboratory work. In the lab, students will have an opportunity to investigate biological concepts and principles, as well as learn basic lab skills and techniques.

Student Activities: Students will be required to complete assignments other than those listed above. Past projects have included caring and feeding of animal specimens, population sampling, field studies, and research presentations.

Student Evaluation: Quizzes, tests, homework assignments, binder contents, laboratory reports, and the semester exams. Other course requirements may be added as necessary.

**NOTE: Students may be required to study preserved animal specimens.**

**321\*BIOL HON BIOLOGY (Fr, Sophs) HC NCAA**

**All Year**

**1 credit**

Prerequisite: Freshmen must have high placement test scores. Sophomores must have consent of instructor.

Course work is the same as for Biology, but at an honors level so biological concepts and principles will be studied in more detail. The students will conduct several experiments and complete one formal laboratory report each quarter.

Student Activities: Students will gain a deeper understanding of course concepts through supplemental classroom work including microscope use and various laboratory activities.

Student Evaluation: Quizzes, tests, homework assignments, lab work, lab reports and the semester exams.

**NOTE: Students may be required to study preserved animal specimens.**

**326ABIO ADVANCED BIOLOGY (Srs) HC 1818 NCAA**

**All year**

**1 credit**

Extra requirement: There will be mandatory laboratory work outside of the scheduled class period.

Prerequisites: Juniors must be concurrently enrolled in honors physics. Seniors must have completed honors physics with an "A" or "B" or chemistry with an "A" and have consent of instructor.

This course is intended to provide an introduction to college level expectations of the understanding of general biological concepts. Students should be able to demonstrate an understanding through written assessment and laboratory technique. Due to the extensive hands-on nature of this class, there will be several mandatory lab classes outside the scheduled course period to ensure completion of laboratory experiments. An independent research project will be conducted and presented at the end of the year.

Student Activities: Students will perform and report on laboratory experiments, view demonstrations, and apply mathematical concepts

Student Evaluation: Grades are based on a combination of quizzes, tests, homework assignments, laboratory reports, and semester exams. Individual assessment grades are subject to approval of participating faculty of associated institutions.

**Note: Students may be required to study preserved animal specimens.**

**311CHEM CHEMISTRY (Sophs, Jrs, Srs) NCAA**

**All Year**

**1 credit**

Prerequisite: Completion of Biology.

This course consists of a blend of traditional chemistry and modern concepts. Theory, as well as practical applications, is stressed. Content includes energy, water properties, atomic structure, the periodic table, chemical formulas and bonding, molecular shape, chemical reactions and equations, and gas laws.

Student Activities: Students are asked to apply the chemical concepts to resolve societal issues and develop problem solving skills. Students will perform and report on lab experiments, view demonstrations, and apply mathematical concepts.

Student Evaluation: Tests, quizzes, lab reports, homework assignments, activities, and the semester exams.

**312\*CHEM HON CHEMISTRY (Sophs, Jrs) HC NCAA All Year 1 credit**

Prerequisite: Completion of Hon Biology with an "A" or "B" or consent from the instructor.

Honors Chemistry is a blend of traditional chemistry and modern concepts. A good mathematical background is essential to success in the course due to the large amount of problem solving in class and in the lab. Content includes chemical bonding and formulas, stoichiometry, acid and base reactions, thermo chemistry, quantum mechanics and molecular geometry.

Student Activities: Students will perform and report on lab experiments, view demonstrations, and apply mathematical concepts.

Student Evaluation: Tests, quizzes, homework assignments, lab reports and semester exams.

**315\*CHEM2 AP CHEMISTRY (Jrs, Srs) HC AP NCAA All Year 1 credit**

Extra Requirement: Because this class has an AP designation, it is essential that a large component of the class be laboratory activities. It will be mandatory to meet every other Wednesday morning to complete required work.

Prerequisite: Juniors must be concurrently enrolled in Honors Physics. Seniors must have completed honors Physics with an "A" or "B", or Chemistry with an "A" and consent of the instructor.

Content includes chemical foundations, atomic structure and periodicity, stoichiometry, chemical reactions, gases, thermochemistry, bonding, properties of solutions, chemical kinetics and equilibrium, acids/bases, entropy, electrochemistry, a detailed look into the nucleus, and organic chemistry.

Student Activities: Students will perform laboratory experiments, write laboratory reports and work science-related mathematical problems.

Student Evaluation: Tests, quizzes, homework, lab reports, and the semester exams.

**330\*PHYS HONORS PHYSICS (Jrs, Srs) HC NCAA All Year 1 credit**

Prerequisite: Completion of Hon Chemistry with an "A" or "B", or consent of the instructor.

Honors Physics relies heavily on mathematics and combines theory with practical application. Topics to be covered include vectors, kinematics, Newton's Law of Motion, work, momentum and optics. Additionally, there will be a three week unit covering astronomy.

Student Activities: Students perform laboratory experiments, laboratory reports, and science-related math problems.

Student Evaluation: Laboratory reports, homework problems, tests, other activities, and the semester exams.

**335\*PHYS2 AP PHYSICS (Srs) HC AP NCAA All Year 1 credit**

Prerequisite: Completion of honors Physics with an "A" or "B".

AP Physics will take an in depth look into Newtonian mechanics, kinematics, circular motion, rotational motion, momentum, thermal physics, electricity and magnetism, waves, optics, atomic physics and nuclear physics.

Student Activities: Students perform laboratory experiments, laboratory reports, and science-related math problems.

Student evaluation: Laboratory reports, quizzes, tests, homework, laboratory work, and semester exams.

**321A&P ANATOMY & PHYSIOLOGY (Jrs, Srs) NCAA All Year 1 credit**

Prerequisite: Completion of Biology or Honors Biology **AND** Chemistry or Honors Chemistry with a passing grade. A junior who took "Biology 2 Anatomy & Physiology" in the 2011-2012 school year may take only Semester 2 in 2012-2013 for 0.5 credit.

Beginning in 2012-2013, Anatomy & Physiology will be offered for a full year. The semester topics will be "Fluids and Transport" and "Environmental Exchange" for semester 1, and "Control and Regulation", and "Support and Movement" for semester 2. Student Activities: Students will engage in data collection and analysis, model building, problem solving, and research presentations.

Student Evaluation: Quizzes, tests, homework, research project reports, lab work and a semester exam.

**NOTE: Students will be required to study preserved animal specimens.**

**322A&P HONORS ANATOMY & PHYSIOLOGY (Jrs, Srs) NCAA All Year 1 credit**

Prerequisite: Concurrent enrollment or completion of Honors Physics with and "A" or "B" or consent of the instructor. A senior who took "Biology 2 Anatomy & Physiology" in the 2011-2012 school year may take only Semester 2 in 2012-2013 for 0.5 credit.

Course work is the same as for Anatomy & Physiology, but at an honors level so biological concepts and principles will be studied in more detail.

Beginning in 2012-2013, Honors Anatomy and Physiology will be offered for a full year. The semester topics will be "Fluids and Transport" and "Environmental Exchange" for semester 1, and "Control and Regulation", and "Support and Movement" for semester 2 Student Activities: Students will engage in data collection and analysis, model building, problem solving, and research presentations.

Student Evaluation: Quizzes, tests, homework, research project reports, lab work and a semester exam.

**NOTE: Students will be required to study preserved animal specimens.**

**336ENVST ENVIRONMENTAL STUDIES (Jrs, Srs)**

**Sem 1 or 2**

**0.5 credit**

Prerequisite: NONE

A diverse science course that investigates the relationship between humans and the world in which we live. Areas of studies include conservation and protection of natural resources, environment education and communication, and environmental research.

Student Activities: A variety of laboratory activities, topographical projects, model building and problem solving.

Student Evaluation: Tests, quizzes, written assignments, lab reports, and a semester exam.

**337FORSC FORENSIC SCIENCE (Jrs, Srs)**

**Sem 1 or 2**

**0.5 credit**

Prerequisite: NONE

A course which focuses on practicing forensic science and analyzing physical evidence found at crime scenes. The fundamental objective is to teach the basic processes and principles of scientific thinking so as to apply them to solving problems.

Student Activities: A variety of laboratory activities which require the observation, collection and classification of data. Additionally, students complete projects in model building and problem solving, view demonstrations, and apply mathematical concepts.

Student Evaluation: Tests, quizzes, written assignments, lab reports, and a semester exam.