

Science

PHYSICS

Grades: 9

Credits: 1.0 Science

Prerequisite: None

Repeat for Credit: No

NCAA Approved: Yes

Physical Science is an introductory high school science lab course. Topics include an introduction to chemistry, chemical and physical changes, periodic table, rates of reaction and phase change, motion, forces, energy and wave theory, earth science, astronomy and engineering. Students learn scientific processes through collection, organization, and analysis of data and will complete several major projects during the year.

BIOLOGY HONORS

Grades: 9-10

Credits: 1.0 Science

Prerequisite: Concurrent enrollment in Algebra or higher math course and instructor approval

Level: Honors

Repeat for Credit: No

NCAA Approved: Yes

This COLLEGE-PREPARATORY course is designed for motivated students of high academic ability and maturity. Students in this class also should have a keen interest in science. While the general course description for Biology also applies to Biology Honors, the topics will often be covered in greater depth and breadth. Some topics will likely be covered more quickly. Students are expected to complete independent individual projects. In addition, an emphasis will be placed on higher level thinking skills.

BIOLOGY

Grades: 10

Credits: 1.0 Science

Prerequisite: None

Repeat for Credit: No

NCAA Approved: Yes

Biology is designed to provide a student with a solid college preparatory background in the fundamental concepts of life and life processes. In this lab based course, students will study selected biological topics including cellular biology, cell chemistry, genetics, photosynthesis, respiration, ecology and evolution.

HEALTHCARE BIOLOGY

Grades: 10

Credits: 1.0 Science

Prerequisite: None

Pathway: Health Careers

Repeat for Credit: No

NCAA Approved: No

Healthcare Biology is a lab based Biology course focused on local and global healthcare. The course aligns with Next Generation Science standards and covers major general biology topics as well as antibiotic resistance, public health, epidemiology, human body systems, and more. In this course, students will conduct hands-on inquiry laboratories highlighting perplexing questions while investigating biology through the lens of medicine.

AP BIOLOGY

Grades: 11-12

Credits: 1.0 Science

Prerequisite: Honors Biology, Chemistry & instructor approval

Level: AP

Repeat for Credit: No

NCAA Approved: Yes

Adhering to the curricula recommended by the College Board and designed to parallel college-level introductory biology courses, AP Biology courses emphasize four general concepts: evolution; cellular processes (energy and communication); genetics and information transfer; and interactions of biological systems. For each concept, these courses emphasize the development of scientific inquiry and reasoning skills, such as designing a plan for collecting data, analyzing data, applying mathematical routines, and connecting concepts in and across domains. AP Biology courses include college-level laboratory investigations.

*May be offered every other year.

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AP PHYSICS

Grades: 11-12

Level: AP

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Concurrent enrollment in Pre-Calculus or higher

AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of physics through classroom study, in-class activity, and hands-on, inquiry-based laboratory work as they explore concepts like systems, fields, force interactions, change, conservation, and waves.

AP ENVIRONMENTAL SCIENCE

Grades: 11-12

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Biology & instructor approval

Students will engage with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental Science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography.

CHEMISTRY 1

Grades: 11-12

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Concurrent enrollment in Algebra 2 or higher

This is a college-preparatory course which covers the fundamental concepts of lab skills and safety, atomic theory and nuclear chemistry, EMR, stoichiometry, bonding, chemical reactions, gas laws, solutions, and the energy changes involved in chemical reactions. Student knowledge and insight into how chemistry principles are present in everyday experience is expanded through collaborative learning, lectures, laboratory activities, classroom discussion, textbook readings, and demonstrations. The application of science practices are the foundation for learning and assessing concepts.

CHEMISTRY 1 HONORS

Grades: 11-12

Level: Honors

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Concurrent enrollment in Algebra 2 or higher and instructor approval

This is a COLLEGE-PREPARATORY course which covers the same general topics found in the Chemistry 1 course, including lab skills and safety, atomic theory and nuclear chemistry, EMR, quantum theory, stoichiometry, bonding, chemical reactions, gas laws, solutions, acid/base reactions and the energy changes involved in chemical reactions. Topics are explored at an accelerated rate, in greater depth, and with a greater use of mathematics. Emphasis is placed on not merely knowing a theory or concept, but also on understanding its application and derivation. Student knowledge is expanded through collaborative learning, lectures, laboratory activities, classroom discussion, textbook readings, and demonstrations. Scientific inquiry methods provide the foundation for learning concepts.

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AP CHEMISTRY

Grades: 12

Level: AP

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Chemistry 1 or Chemistry 1 Honors and instructor approval

The chief goal of this fast-paced COLLEGE-LEVEL course is to prepare students to master the chemistry concepts and knowledge defined by the College Board and assessed on the AP Chemistry exam. The AP Chemistry course provides students with college level coursework that gives an exceptional foundation for success in future accredited coursework. Students develop advanced inquiry and reasoning skills as they conduct college-level work in chemistry, covering topics such as equilibrium, thermodynamics, and kinetics, and further develop fundamental chemistry concepts introduced in Honors Chemistry. The laboratory activities, equivalent to those of typical college courses, are completed collaboratively and utilize an inquiry approach involving probeware and technology. Students can earn 12-15 college credits by passing the AP exam.

*May be offered every other year.

HUMAN ANATOMY & PHYSIOLOGY

Grades: 11-12

Pathway: Health Careers

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Honors Biology or instructor approval

Other: SOU credit may be available

Human Anatomy and Physiology is an advanced, college-level biological course of study which focuses on the general body plan and specific systems (skeletal, muscular, nervous, circulatory, digestive etc.). This course involves extensive laboratory activities including anatomical dissections. This course is recommended for students interested in careers in medicine and students may register for college credit through SOU or RCC.

BOTANY/HORTICULTURE

Grades: 11-12

NCAA Approved: No

Credits: 0.5 Science

Repeat for Credit: Yes (Cannot take same semester twice)

Prerequisite: Biology or instructor approval

Horticulture is a field-based life science course that investigates the role and importance of plants in our environment. Students investigate the germination of seeds and factors required for plants to grow. Classification and identification of plants and the use of plants within our environment are emphasized to help minimize the impact of humans on the planet. Students will further explore plant anatomy, reproductive strategies, and the essential plant nutrients required for proper plant growth. Time will be dedicated to work within the school's greenhouse, gardens, campus landscaping and off-campus projects to learn how to apply these gardening techniques to their own homes in the future.

WILDERNESS MEDICINE

Grades: 11-12

NCAA Approved: No

Credits: 0.5 Science

Repeat for Credit: Yes (Cannot take same semester twice)

Prerequisite: None

This course is based on ecology, environmental science and medical considerations in the wilderness. A heavy emphasis will be placed on local ecosystems. Medical topics will include; wild animal attacks, waterborne illness', travel medicine, altitude illness, swift water rescue, survival and many others.

ASTRONOMY @ NORTH MEDFORD HIGH SCHOOL

Grades: 11-12

Level: Honors

NCAA Approved: Yes

Credits: 1.0 Science

Repeat for Credit: No

Prerequisite: Geometry & Biology or concurrent enrollment in Algebra 2

This course (a college-level course) is taught by the use of the district planetarium at North Medford High School and includes study in the solar system, stars, galaxies, and interstellar bodies and deep space research. Students learn how to operate telescopes and identify essential parts of the solar system. Students enrolled in this class may register for college credit through SOU if they have completed or are currently enrolled in Algebra 2 and physical science. (Transportation is not provided for South Medford High School students.)