



Science Department Statement of Philosophy

Science at SPCPA is grounded in the belief that all students can and should be scientifically literate. Scientific literacy enables our students to use scientific principles to make personal decisions and to participate in discussions that affect society. Classroom experiences include hands-on activities rooted in scientific inquiry and collaboration. The Science Department creates an environment that develops thoughtful, creative and knowledgeable citizens. Curriculum is based on the Minnesota State Standards and after the completion of Biology, students will be prepared to take MCA II test in Science.

Science Department Curriculum

Graduation Requirement: 3 Years (1 Year must be Biology)

Biology is a course designed to provide students with an overview of the processes of living things, from a cellular level to the biosphere. Students will learn the various cellular activities required to support life, which include the following topics: cell structure and function, photosynthesis, growth and division, and genetics. Other content areas that will be covered over the course of the year include: the classification of organisms, theories of biological change, microbiology, diversity of plants and animals, the human body, and ecological concepts that impact our world and the living organisms it supports. Students will strengthen their scientific vocabulary to engage in virtual laboratory experiences, projects, and discussions.

Honors Biology is designed for a student committed to academic achievement. The course will be more rigorous and require a greater commitment from students. Students best suited for this class should have excelled in previous science classes. Honors Biology is a course designed to provide students with a greater understanding of the processes of living things, from a cellular level to the biosphere. Students will learn the various cellular activities required to support life, which include the following topics: cell structure and function, photosynthesis, growth and division, and genetics. Other content areas that will be covered over the course of the year include: the classification of organisms, theories of biological change, microbiology, diversity of plants and animals, the human body, and ecological concepts that impact our world and the living organisms it supports. Honors Biology students will engage in advanced virtual laboratory experiences, critical thinking exercises, and current scientific issues. Prerequisite: Administrative and/or Teacher Recommendation

Anatomy and Physiology is a lecture and laboratory-based study of the human body emphasizing the complementary nature of structure and function, molecular and cellular interactions, homeostasis, and metabolic processes. Includes a study of cells, tissues, membranes, skeletal, muscular, and reproductive systems. Prerequisite: Biology or Honors Biology

Chemistry and Honors Chemistry courses focus on three main goals (1) to provide a deep and broad introduction to chemistry concepts and skills (2) to prepare students for further study of chemistry in higher education and (3) to relate chemistry to the surrounding environment and to products produced in industry. Honors Chemistry students must have strong math skills and a commitment to a more rigorous course of study. Theoretical chemical concepts and problem solving with heavy emphasis on formal laboratory experiments will be consistent throughout the course. Prerequisite: Administrative and/or Teacher Recommendation

In **Physics and Honors Physics** courses, science and mathematics meet to describe and explain nature. Myriad phenomena, from planets to circuits, will be explored. Students will apply their knowledge during lab activities, and present their analyses of real-world situations to their classmates as a part of their unit projects. Over the course of the year, students will study Kinematics, Work and Energy, Electricity and Magnetism, Waves, Light, Optics, and additional topics at the instructor's discretion. Students prepared for advanced course work should contact the instructor directly if interested in an honors distinction.

Forensics provides an overview of scientific methods used in crime scene investigation. Students will review and conduct labs in modern DNA analysis, fingerprinting, fiber analysis, ballistics analysis, print impressions, bone and dental analysis, and entomology. The course will explore forensic science careers from the crime scene investigator to the medical examiner and use laboratory methods, instrumentation, and strategies often utilized within the criminal justice system. NOTE: This is a one semester Science Elective course and does not qualify as one of the Science credits required for graduation.

College in the Schools – Science

Students enrolled in the College in the Schools program will have concurrent enrollment at both SPCPA and the University of Minnesota where upon satisfactorily completing the course, students will receive Language Arts credit at SPCPA and the University of Minnesota.

College in the Schools Anatomy and Physiology (Semesters 1 & 2) Essentials of Human Anatomy and Physiology (PSTL 1135) (4.0 University of Minnesota Credits)

This course examines specific topics in human anatomy and physiology, such as fitness and disease and body systems such as the respiratory, muscular, and cardiovascular systems. Students engage in a wide range of learning activities, such as cooperative learning groups, computer enhanced learning, anatomical model building, and inquiry-based lab activities. Prerequisites: Senior; B or above in Chemistry; Application Process