

SC: Science

Mathematics proficiency is a prerequisite for all Science courses. See the description for satisfying mathematics proficiency in the section below that refers to Math.

Math

Mathematics Proficiency is a requirement for the AAS degree and is a prerequisite for all mathematics and science classes. Based on placement, a student who shows need for improvement in mathematics may be required to enroll in MA 080 or MA 081 before registering for classes that have Mathematics Proficiency as prerequisite. Mathematics Proficiency may be demonstrated by a qualifying score on the mathematics portion of the SAT or ACT or by placement exam for students that do not have SAT or ACT scores. The Mathematics Proficiency may also be satisfied by transfer of an appropriate credit-bearing mathematics course or by a passing grade in an equivalent developmental mathematics course offered at another accredited college or university.

SC 032 — Color Science Laboratory

1 credit; 2 lab hours

This lab offers students a hands-on opportunity to learn about the various topics covered in SC 332. State-of-the-art equipment is used to perform spectrophotometric and colorimetric analysis of samples prepared using paints, dyes, filters, colored lights, and colored papers to explore the relationship between color and light, the principles of additive and subtractive color mixing, and instrumentation-based color matching. Prerequisite(s): mathematic proficiency (see beginning of Science section). Co-requisite(s): SC 332.

SC 100 — Wired

3 credits; 2 lecture and 2 lab hours

This course introduces students to the Arduino microprocessor, basic electronics, and coding. Using an Arduino, students will construct electronic circuits involving sensors and actuators and write code to control the circuits. Developing such concepts as the internet of things, students will connect their circuits to the internet using wireless technology.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 101 — Biodesign: Innovation at the Intersection of Science and Design

3 credits; 2 lecture and 2 lab hours

Biodesign, an inclusive, sustainable futures approach to design, takes inspiration from the tools of nature to create materials, systems and technologies based on the harmonies of a natural world. Through lectures, labs, field trips, exams, and group projects, students receive a foundation in biology, biomimicry, and sustainability science, enabling them to envision current and future biotechnology solutions to the diverse sustainability challenges of our global society.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 102 — Climate Change

3 credits; 2 lecture and 2 lab hours

Presents elements of climate and climate change. Includes the basic components of meteorology such as weather variables, energy exchanges, greenhouse gases, and the water content in the atmosphere. Addresses anthropogenic, naturally occurring forces and solar influences in climate change.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 103 — Environmental Justice Through the Lens of Chemistry

3 credits; 3 lecture hours

In this course, a descriptive chemical and biochemical approach will be used to explore environmental chemistry, and further students' understanding of ethics, social injustice and sustainability. Selected case studies of environmental injustice will set a context for their learning and understanding of science. Specific examples of industrial processes, their environmental impacts, and the safety of consumer products are some of the environmental concerns that will drive students' exploration of science.

Prerequisite(s): Mathematics Proficiency.

SC 109 — Pick Your Poison: Introduction to Materials Toxicology

3 credits; 3 lecture hours

This course explores the science behind personal, occupational, and environmental health and safety using toxicology case studies on materials. Students describe the sources and handling of everyday and hazardous materials and wastes connecting topics across chemistry, biochemistry, and materials science. Preventative actions are highlighted to mitigate negative outcomes and impacts.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 111 — Introduction to the Physical Sciences

3 credits; 3 lecture hours

Presents basic principles of chemistry, physics, and earth and space sciences with emphasis on understanding the physical world. Includes theoretical concepts as well as applications. Illustrated by suitable lecture demonstrations.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 112 — Earth Science

3.5 credits; 3 lecture and 1 lab hours

The historical development, current research, and fundamental principles associated with meteorology, geology, and astronomy are studied. Trips to research and field sites are included.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 121 — Introduction to Biological Science

3 credits; 3 lecture hours

Examines the fundamentals of biology with emphasis on molecular, cell, and organismal biology. Biotic diversity, evolution, and genetics are also presented. (G3: Natural Sciences)

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 122 — Field Biology

3 credits; 2 lecture and 2 lab hours

Covers the major principles of biology by studying organisms and their interrelationships in natural settings. Emphasis is given to habitats within New York City. Laboratory sessions, a weekend field trip, and visits to wildlife refuges, botanical gardens, and parks are included. Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 132 — Color Science for Photography

3 credits; 2 lecture and 2 lab hours

This color science course focuses on topics that are relevant to photography majors, including digital color and light. Weekly laboratory exercises provide students with hands-on experience with the technologies of color analysis and formation.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 145 — Introduction to Chemistry of Our Lives

3 credits; 2 lecture and 2 lab hours

Develops essential principles of general and organic chemistry, emphasizing a descriptive, rather than mathematical, approach. Students will learn the fundamentals of chemistry by examining topics that include the chemistry of the air we breathe, our body, energy sources and the use and processing of products that supplement our everyday lives.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 147 — The Forensics of Fiber Analysis

3 credits; 2 lecture and 2 lab hours

This course focuses on the fundamental concepts in forensic science by examining sample evidence collected from mock crime scenes. Chemical and spectroscopic techniques are used to introduce the concepts of forensic fiber analysis.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 148 — The Science of Jewelry (Interdisciplinary)

3 credits; 2 lecture and 2 lab hours

This is an interdisciplinary course cross-listed with JD 148. This course gives students an understanding of the scientific properties and geologic origins of materials used in the manufacture of jewelry, current issues in ethical and sustainable sourcing of these materials, and economics of the precious metals past and present.

SC 149 — Chemistry for Cosmetics and Fragrances

3 credits; 2 lecture and 2 lab hours

This course examines the basic principles of chemistry and the chemistry of cosmetics and fragrances. Emphasis is placed on students' becoming scientifically literate in the field of chemistry thus allowing them to expand their knowledge of products and applications in the cosmetics industry.

SC 201 — Plants, Pollinators, and People

3 credits; 3 lecture hours

This course explores modern plant biology with special emphasis on how plants affect humans and society. Emphasis is on experiential work (small groups, in-class experiments, field trips) towards becoming scientifically literate in the field of Biology.

SC 202 — The True Cost: A Product's Life Cycle and the Science of Sustainability

3 credits; 2 lecture and 2 lab hours

Students use key concepts in physical science to explore pathways to global sustainable development. Students perform a life cycle assessment to assess the environmental impact of a product, suggest improvements, and analyze strategies to support upwards of 7.5 billion people within boundaries that define a "safe operating system for humanity.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 203 — Disease Ecology in a Changing World

3 credits; 3 lecture hours

Students learn ecology and evolution through the lens of infectious diseases, which are of increasing urgency in the modern world, and central to many current and historical social and political topics. Through lectures, readings, labs, guest speakers and creative projects, students learn about what causes disease, how diseases emerge and spread, how humans respond to disease with medicine and technology, and how anthropogenic changes to our environment are impacting the risk and spread of disease.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 204 — Designing with Emerging Materials (Interdisciplinary)

3 credits; 2 lecture and 2 lab hours

This is an interdisciplinary course cross-listed with TD 204. An introduction to basic skills and knowledge in science and textile design, enabling design innovation. An exploration of textile concepts and integration of the handmade with emerging materials and technologies. Design-led experimental research with biomaterials, biopigments, nanomaterials, and other advanced materials used to envision and prototype sustainable solutions to real world challenges.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 206 — The Chemistry and Art of Natural Dyes

3 credits; 2 lecture and 2 lab hours

Students use key concepts in chemistry to explore the science and art of natural dye techniques. This course explores the historical impact and current realities of the ancient science and art of dyeing with plants, minerals and insects, with application to emerging materials and technologies for sustainable textiles.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 245 — Chemistry of the Everyday World

3 credits; 3 lecture hours

The natural and synthetic environment surrounding everyday life is used to introduce basic concepts of chemistry. In this course students explore fundamental concepts in chemistry by examining their environment and the ways in which they live.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 253 — Ecology and Environmental Problems

3 credits; 3 lecture hours

Introduces principles and applications of ecosystem, community, and population ecology, with particular emphasis on the effects of human activities on the natural environment. Current problems in acidification, conservation biology, desertification, global climate change, habitat destruction, ozone depletion, waste management, and pollution are addressed. Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 254 — Ecology and Photography: Sustainable New York (Interdisciplinary)

3 credits; 1 lecture and 4 lab hours

This is an interdisciplinary course cross-listed with PH 254. It is an introduction to field ecology, environmental storytelling, conservation, and wildlife photography and videography. Students are exposed to field trips, lectures, and discussion within some of New York's parks and habitats. Through exploration and personal observations, applied scientific research methods are translated into a series of still pictures and moving images about environmental issues. (G6: The Arts).

SC 299 — Independent Study in Science

1-3 credit

Prerequisite(s): a minimum 3.5 GPA and approval of instructor, chairperson, and dean for Liberal Arts.

SC 326 — Human Nutrition

3 credits; 3 lecture hours

Studies the basic principles of nutritional science, including the relationships between health, disease, and special nutritional requirements. History, fads, and fallacies of nutrition are covered. (G3: Natural Sciences)

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 331 — Color Science and Digital Color Reproduction

3 credits; 2 lecture and 2 lab hours

Not open to students who have taken SC 332. The basic principles of color science and how they are applied in digital color reproduction are introduced. Students study the psychophysical basis of color perception, the measurement of color, and additive and subtractive color mixing. They learn how color is input into the computer, how the computer manipulates and displays color, and how color is reproduced in output.

Prerequisite(s): mathematic proficiency (see beginning of Science section).

SC 332 — Color and Light

3 credits; 3 lecture hours

The basic principles of color science, including color measurement and color reproduction, are examined. Emphasis is on the physical basis of color: the relation between color and light, the interaction of light and matter, and the physics of light. Among the topics covered are color vision, color in art and nature, color imaging, light sources, CIE, colorimetric analysis, color matching, and quality control. (G3: Natural Sciences)

Prerequisite(s): mathematic proficiency (see beginning of Science section)

Co-requisite(s): SC 032.

SC 391 — Crime Scene Chemistry (Honors)

4 credits; 3 lecture and 2 lab hours

This course explores fundamental concepts in chemistry by examining actual case studies related to criminal activity. Students learn the techniques used by investigators to gather and analyze evidence and data. The laboratory section of the course provides hands-on experience with the techniques used by scientists in the field of forensic chemistry.

Prerequisite(s): qualification for Presidential Scholars Program or 3.5 GPA with approval of dean for Liberal Arts, and mathematic proficiency (see beginning of Science section).

SC 499 — Independent Study in Science

1-3 credit

Prerequisite(s): a minimum 3.5 GPA and approval of instructor, chairperson, and dean for Liberal Arts.