

# SCIENCE (SC)

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## SC115: Principles of Nutrition

This is an introductory-level course in which students investigate the fundamental concepts of nutrition: food sources, nutrient function, digestion, absorption, and metabolism. Special attention is given to learning to apply nutritional principles to food choices in a way that encourages a healthy lifestyle. Students will learn how nutritional needs change from infancy through adulthood including pregnancy and the senior stages of life.

Quarter Credit Hours: 5 | Prerequisite: None

## SC116: Survey of Human Structure and Function

In this course, you will survey the foundations of anatomy and physiology of the human body as they apply to the health science fields. Topics include the cells, tissues, organs, and functions of the various body systems. You will also be introduced to the organization and structure of the human body.

Quarter Credit Hours: 5 | Prerequisite: None

## SC121: Human Anatomy and Physiology I

In this course, you are taught the anatomy and physiology of the human body. Topics include the various body systems, structures, cells, and tissues and the principles of homeostasis. You are introduced to the organization and structure of the human body. This course includes a lab component.

Quarter Credit Hours: 5 | Prerequisite: None

## SC131: Human Anatomy and Physiology II

In this course, which is a continuation of SC121: Human Anatomy and Physiology I, students are taught the anatomy and physiology of the human body. Topics include, but are not limited to, the cardiopulmonary, immune, gastrointestinal, urinary, and reproductive systems. These systems will be covered on a cellular, tissue, organ, and system level. This course includes a lab component.

Quarter Credit Hours: 5 | Prerequisite: SC121

## SC156: Principles of Chemistry

This course will allow you to examine the basic principles of chemistry, with an emphasis on the chemical processes that affect your life. You will learn how to apply a variety of chemical concepts, such as the states of matter and chemical properties and reactions, to better understand the natural and human-made world. No previous knowledge of chemistry is needed to enroll in this non-majors science course.

Quarter Credit Hours: 5 | Prerequisite: MM212 highly recommended

## SC180: General Chemistry I

This course provides you with a basic understanding of the fundamental laws and principles of chemistry. You will gain an understanding of the nature of atomic properties and bonding. You will also learn the principles of the scientific method, chemical nomenclature, reactivity, chemical units, and thermochemistry.

Quarter Credit Hours: 5 | Prerequisite: MM212 highly recommended

## SC190: General Chemistry II

As a continuation of SC180 General Chemistry I, you will be introduced to chemical equilibria, kinetics, and other topics related to chemical reactivity. This course will be especially helpful for students pursuing pre-professional programs in life sciences, sustainability, and other health programs.

Quarter Credit Hours: 5 | Prerequisite: SC180

## SC200: Discovering Science - Current Issues in a Changing World

This course is designed to introduce students to some of the most important concepts in science including inheritance, energy, randomness, and measurement. In addition, the course will give students a chance to explore the human aspects of science: how people put science into practice, how societies think about scientific findings, and why science depends on ethical practices. Knowledge gained in the course will help inform further study in many disciplines and will help students better understand how science affects their personal and professional lives.

Quarter Credit Hours: 5 | Prerequisite: None

## SC200M1: Basic Scientific Principles and Their Limitations

Explain basic scientific principles and their limitations.

Quarter Credit Hours: 1 | Prerequisite: None

## SC200M2: Scientific Concepts Across Disciplines

Compare and contrast discipline-specific scientific concepts.

Quarter Credit Hours: 1 | Prerequisite: None

## SC200M3: How Science and Life Work Together

Employ appropriate scientific ideas and methods to everyday situations.

Quarter Credit Hours: 1 | Prerequisite: None

## SC200M4: Technology Throughout History

Analyze how technology has driven scientific progress throughout history.

Quarter Credit Hours: 1 | Prerequisite: None

## SC200M5: Applying Science Day to Day

Evaluate how science affects your personal and professional life.

Quarter Credit Hours: 1 | Prerequisite: None

## SC206: Introduction to Sustainability

This course introduces you to the important topic of sustainability, including the development of solutions and practices that support social, ecological, and economic health to create thriving, healthy, diverse and resilient communities for this generation and generations to come. You will explore sustainable applications of environmental science, sustainable development, agriculture, water, climate change, energy, pollution, waste, and biodiversity.

Quarter Credit Hours: 5 | Prerequisite: None

## SC225: Environmental Science

This course offers students a chance to apply basic scientific principles to an exploration of the environment and the role of humans within it. The course addresses the interrelationships between natural systems and the increasingly industrial, technological societies humans create. Students will examine a variety of ethical and cultural perspectives on nature and the environment, with an eye toward giving students the skills to think critically about global challenges such as energy, food, population, and climate change and examine how they can apply sustainable living concepts to their personal lives.

Quarter Credit Hours: 5 | Prerequisite: None

## SC226: Environmental Science Lab

This environmental science lab course provides an overview of scientific research and report writing related to the environmental sciences. Interactive discussion boards and readings create an overview of ecological topics, while practical lab experiences create a real-world laboratory environment for scientific investigation and data collection. This course gives you first-hand experience of important scientific aspects of environmental studies including air and water quality, natural resource management, and energy consumption and conservation.

Quarter Credit Hours: 2 | Prerequisite: SC225, may be taken concurrently

**SC235: 🌐 Human Biology**

In this introduction to biology, you will explore the living world of humans. The course emphasizes the processes of life from the molecular and cellular basis of life to human organ systems. Practical applications of biology in everyday life are stressed throughout the course. No prior study of biology is required to enroll in this non-majors course.

Quarter Credit Hours: 5 | Prerequisite: None

**SC235M1: Principles of Human Biology**

Describe the underlying characteristics of living things.

Quarter Credit Hours: 1 | Prerequisite: None

**SC235M2: Human Organ Systems**

Describe the complexity of human organ systems.

Quarter Credit Hours: 1 | Prerequisite: None

**SC235M3: The Body and the Environment**

Describe how the nervous system, skeletal, and muscular systems allow humans to interact with the environment.

Quarter Credit Hours: 1 | Prerequisite: None

**SC235M4: The Human Body and Immunity**

Describe how the human body functions to maintain homeostasis and protect us from pathogens and cancers.

Quarter Credit Hours: 1 | Prerequisite: None

**SC235M5: DNA and Inheritance**

Illustrate the role of DNA and genes in determining inherited characteristics.

Quarter Credit Hours: 1 | Prerequisite: None

**SC236: Human Biology Lab**

This lab course will accompany SC235: Human Biology. The lab course approaches science practically, tying interactive experiments and observations to the knowledge associated with SC235: Human Biology. Each unit has a discussion board and a written component; often a module has two experiments or activities. Specifically, this lab course includes topics such as air quality and ecology as they impact human health, an intensive lab study of the human respiratory system, and the roles of genetics and heredity in human biology.

Quarter Credit Hours: 2 | Prerequisite: SC235 (may be taken concurrently)

**SC246: 🌐 Fundamentals of Microbiology**

Fundamentals of Microbiology will review basic microbial cell structure, function, and genetics. The role of microorganisms and their effect on humans and the environment will also be explained. Aspects of medical and public health will be emphasized, as will bacterial and viral diseases, parasites, immunology, and epidemiology. Course material and labs are directly relevant to studies in health sciences, biological sciences, nursing, and genetics.

Quarter Credit Hours: 5 | Prerequisite: None

**SC246M1: Introduction to Microbiology and Chemistry**

Describe the anatomy of prokaryotic cells.

Quarter Credit Hours: 1 | Prerequisite: None

**SC246M2: Microbial Growth and Genetics**

Illustrate the challenges of controlling microbial growth.

Quarter Credit Hours: 1 | Prerequisite: None

**SC246M3: Prokaryotic and Eukaryotic Microbes, Viruses, and Chemotherapy**

Investigate the impact of disease-causing microorganisms on human health.

Quarter Credit Hours: 1 | Prerequisite: None

**SC246M4: Epidemiology, Microbial Pathogenicity, and Immunology**

Examine methods of microbe-related disease management in medical and public health.

Quarter Credit Hours: 1 | Prerequisite: None

**SC246M5: Environmental Microbiology**

Analyze the role of microbes in industry and the environment.

Quarter Credit Hours: 1 | Prerequisite: None

**SC250: 🌐 Fundamentals of Science**

Fundamentals of Science is a science course that surveys the basic concepts of a range of scientific disciplines. Students are introduced to science topics including physical science, environmental science, chemistry, biology, and genetics. Within each discipline, real-world examples are used to highlight the application of science in daily life. Investigations into energy sources and impacts, forensic science, and unit conversions allow students to practice the scientific method and conduct scientific research. A focus is given to evaluating sources of scientific information for credibility, including the portrayal of science in the media.

Quarter Credit Hours: 5 | Prerequisite: None

**SC250M1: Evaluating the Credibility of Scientific Information**

Compare and contrast sources of information.

Quarter Credit Hours: 1 | Prerequisite: None

**SC250M2: Systems of Measurement**

Apply systems of measurement to various scenarios.

Quarter Credit Hours: 1 | Prerequisite: None

**SC250M3: Human Interactions With the Environment**

Analyze human interactions with the environment.

Quarter Credit Hours: 1 | Prerequisite: None

**SC250M4: The Atom and Beyond**

Apply physical science concepts to real-world applications.

Quarter Credit Hours: 1 | Prerequisite: None

**SC250M5: Science and the Media**

Critique the portrayal of science in movies, books, or media.

Quarter Credit Hours: 1 | Prerequisite: None

**SC255: Research Methodology**

This course provides learners with a fundamental understanding of the scientific method and scientific research methodology. You will plan and propose the framework for a research project that includes a concise problem statement leading up to a problem-solving plan. You will practice project planning, review of scientific literature, data analysis, and the creation of a final report.

Quarter Credit Hours: 5 | Prerequisite: None

**SC302: Topics in Sustainability**

This course introduces you to important topics related to different areas of sustainability. Topics will include the environment, climate change, energy, social justice, and economics, as well as other interdisciplinary topics related to sustainability.

Quarter Credit Hours: 6 | Prerequisite: None

**SC320: Microbiology for Health Professions**

This course introduces students to a diverse world of microorganisms including their role in health and disease. Properties of prokaryotes and eukaryotes are discussed, with emphasis on different characteristics of microorganisms including morphology, metabolism, physiochemical characteristics, and genetics. Students learn how microorganisms contribute to all areas of everyday life including food, water, environment, and industry. Important microbial diseases and the immune system and its role in fighting microbial diseases are also explored.

Quarter Credit Hours: 6 | Prerequisite: None

**SC325: Environmental Risk Assessment**

This course introduces the basic concepts of environmental risk assessment, examines various potential environmental risks, including natural disasters and examines how science, government, business, and industry measure and prepare for environmental risks. By the end of this course, you will be able to describe the concept of risk, the risk assessment process, analyze risk management and mitigation options, and the political and social factors that can influence their selection.

Quarter Credit Hours: 6 | Prerequisite: SC225 recommended

**SC335: Biochemistry**

This course familiarizes students with proteins, lipids, carbohydrates, and nucleic acids, and their structure, chemical composition, and functions. Studies include chemical characteristics, nomenclature, kinetic control, and functions of enzymes.

Quarter Credit Hours: 6 | Prerequisite: SC156 recommended

**SC340: The Biology of Pollution**

This course will review a range of topics emphasizing major environmental pollutants that impact the structure and function of aquatic and terrestrial ecosystems. This course will focus on air, water, and soil resources, pollutant pathways, impacts on humans and wildlife, and how various pollutants influence biological, chemical, and physical processes.

Quarter Credit Hours: 6 | Prerequisite: SC225 recommended

**SC350: Conservation of Natural Resources**

In this course, you will explore a number of current environmental issues related to the use and abuse of natural resources including soil, freshwater, energy, living organisms, and entire ecosystems. You will examine how fundamental principles of ecology and economics are applied as the scientific bases for natural resource management. You will explore how human values toward nature shape legislation, natural resource management, and often lead to stakeholder conflict. You will learn from case studies how the integration of scientific principles and environmental ethics has helped resolve complex issues and led to the implementation of sustainable natural resource management.

Quarter Credit Hours: 6 | Prerequisite: None

**SC361: Population and Society**

This course introduces the study of theories, concepts, and issues regarding human populations. Issues pertaining to population growth, migration, the structure of various world demographics, and subsequent environmental degradation are explored.

Quarter Credit Hours: 6 | Prerequisite: None

**SC362: Our Changing Climate**

Climate change is one of the biggest challenges facing the world today. This class will examine the science of a changing climate, as well as its impact on humanity. Topics will include how climate change affects ecosystems, the role of policy and regulatory initiatives in climate change planning, as well as mitigation strategies and other solutions to climate change issues.

Quarter Credit Hours: 6 | Prerequisite: None

**SC415: Environmental Health**

This course examines core environmental health concepts. The course material addresses occupational health, environmental justice, relevant laws and policies, and the role of organizations in addressing current and emerging challenges faced by professionals in the field. Topics in the course may include epidemiology, toxicology, pollution control (air, water, soil, and noise), and resource safety (food, water, and waste management).

Quarter Credit Hours: 6 | Prerequisite: None

**SC435: 🌐 Genetics**

This course explores the molecular basis of genetics as applied to human health, including developmental genetics, immunogenetics, and cancer genetics. Using case studies, students learn the role of dominant and recessive genes in various diseases and the importance of genetic counseling. In addition, students will discuss gene-mapping methodologies and ethical issues in the context of clinical genetics.

Quarter Credit Hours: 6 | Prerequisite: None

**SC435M1: Fundamentals of Genetics**

Explain the principles of heredity.

Quarter Credit Hours: 1 | Prerequisite: None

**SC435M2: Principles of Heredity**

Explain the chromosomal basis of inheritance.

Quarter Credit Hours: 1 | Prerequisite: None

**SC435M3: Replication, Transcription, and Translation**

Examine the principles of molecular genetics.

Quarter Credit Hours: 1 | Prerequisite: None

**SC435M4: Regulation of Gene Expression**

Analyze the principles of genetic variation.

Quarter Credit Hours: 1 | Prerequisite: None

**SC435M5: Biotechnology and Genetic Analysis**

Assess the role of genetic technologies in industry.

Quarter Credit Hours: 1 | Prerequisite: None

**SC435M6: Genetics and Society**

Evaluate how genetic concepts affect current societal issues.

Quarter Credit Hours: 1 | Prerequisite: None

**SC499: Bachelor's Capstone in Sustainability**

This capstone course builds on the concepts of all the courses taken within the Bachelor of Science in Sustainability and provides you with an opportunity to integrate their previous coursework in a meaningful review of your learning and to assess their level of mastery of the stated outcomes of your degree program.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Dean