

Science (SCIN)

SCIN120 Foundations of Scientific Inquiry Laboratory (1 semester hours)

This course provides an introductory laboratory experience for students who have previously completed a course in the natural sciences (biology, chemistry, physics, earth science, or astronomy) and require a laboratory experience to meet the general education natural sciences requirement for their degree. Students will discuss and apply the steps of the scientific method to activities and simulations drawn from across the natural sciences. Students will also review and demonstrate science information literacy skills through source selection, critical thinking, and writing. Note: Enrollment in this course is limited to incoming transfer students. Contact the Transfer Credit Department at CreditAward@apus.edu for information and registration instructions. This course may only be taken once for credit.

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN120>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN130 Introduction to Biology with Lab (4 semester hours)

This course introduces students to biological systems in their natural environments. The course offers an understanding of biological principles and the properties of life. The topics covered in this course include the structure and function of plants and animals; cell biology principles; genetics; reproduction; development and growth; biological diversity; the principles of evolution; and interactions among organisms and with their environment. The course will also include online lab work, which is designed to reinforce the concepts in the assigned reading. The lab involves study through interactive simulations, videos, and animations, which will be provided to students throughout the course. Topics covered in this course require some comfort with math. This course is time-intensive, so students should ensure they have the time to fully commit to this course if it is used to fulfill the General Education science course requirement.

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN130>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN131 Introduction to Chemistry with Lab (4 semester hours)

This course introduces students to the principles of basic chemistry; the terminology, methodology, and worldview of chemistry; and chemistry's practical application to everyday living. Topics covered in this course include acids, bases, atomic structure, chemical equations, chemical reactions, and chemical language and nomenclature. Students will also learn about gases, molecular structure, solution chemistry, chemical mathematics, organic chemistry, and biochemistry. This course will also include lab work, designed to help students to learn how to make qualitative and quantitative observations about physical and chemical phenomena, make calculations, and test their own reasoning. Through interactive virtual laboratories, students will acquire skills in laboratory techniques and critical thinking that will build upon the concepts in the class. Topics covered in this course require some comfort with math. This course is time-intensive, so students should ensure they have the time to fully commit to this course if it is used to fulfill the General Education science course requirement.

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN131>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN132 Introduction to Human Anatomy & Physiology with Lab (4 semester hours)

This course introduces students to the fundamental principles of biology, emphasizing the structure and function of the human body. The course will begin with a general introduction to human biology and the scientific method. It continues with an overview of organic chemistry; a study of cellular and tissue structure and function; and the organization and regulation of body systems. Other topics covered in the course include the human body's organ systems: cardiovascular, lymphatic, immune, digestive, respiratory, urinary, skeletal, muscular, nervous, endocrine, and reproductive. The course closes with introductions to genetics, human evolution, and ecology. Through laboratory simulation software, students will do lab exercises designed to provide a deep, practical understanding of the basic principles of human anatomy and physiology. Topics covered in this course require some comfort with math. This course is time-intensive, so students should ensure they have the time to fully commit to this course if it is used to fulfill the General Education science course requirement.

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN132>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN133 Introduction to Physics with Lab (4 semester hours)

This course offers an introduction to classical physics for non-scientists. Students will learn to apply Newtonian principles to the fundamental topics of motion, gravitation, momentum, work, energy, heat, wave behavior, sound, light, electricity, and magnetism. Basic algebra will be used in this course to demonstrate how mathematics can describe and predict the real-world behavior of objects ranging from electrons to planets. Students will be expected to relate physics principles to their daily lives. Through interactive simulation software, lab exercises will teach students how to take measurements, make observations about physical phenomena, make calculations, and test out their own reasoning. Topics covered in this course require some comfort with math. This course is time-intensive, so students should ensure they have the time to fully commit to this course if it is used to fulfill the General Education science course requirement.

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SCIN134 Introduction to Astronomy with Lab (4 semester hours)

This course will introduce students to the wonders of the universe. Topics covered in this course will involve deciphering the movement of objects in the sky; learning how astronomers decode the light coming to us from distant objects; exploring the Earth and other bodies in our solar system; and investigating the properties and structure of stars, galaxies, and the universe. Students will be encouraged to develop a conceptual understanding of these topics beyond the mere memorization of facts. With lab work and online tools, students will engage in astronomy inquiries and learn how astronomers work by asking research questions, collecting data, and defending evidence-based conclusions. This course is conceptual in nature, but students should expect to use some mathematics. Completion of at least college algebra prior to taking this course is highly recommended. This course has a required prerequisite of MATH111. Topics covered in this course require some comfort with math. This course is time-intensive, so students should ensure they have the time to fully commit to this course if it is used to fulfill the General Education science course requirement. (Prerequisite: MATH111)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN134>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN137 Introduction to Meteorology with Lab (4 semester hours)

Introduction to Meteorology covers the fundamental principles governing the behavior of our atmosphere and the duties and methods of the professional meteorologist. Students will gain insight into the exciting discipline of meteorology, discussing topics such as cloud formation, movement in the atmosphere, thunderstorms, tornadoes, meteorological satellites, and climate change. The Meteorology laboratory will take the student deeper into the aspects of our weather through the study and exploration of our atmosphere via online interactive modules prepared by professional meteorologists. Topics to be discussed range from hurricane formation and the impacts of extreme weather to forecasting local weather and toxic pollution. The online laboratory modules increase the student's awareness of our planet through hands-on activities.

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN137>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN138 Introduction to Physical Geology with Lab (4 semester hours)

Geology encompasses the study of our planet, and students in this course will explore: how it formed, the nature of its interior, the materials of which it is composed, landforms, earthquakes and volcanoes, geologic resources, and geologic history. Current events that students learn about in the news, ranging from volcanic eruptions, earthquakes, landslides, and more will fit into a larger picture of how Earth works and why such things happen. The laboratory component of the course provides students with practical activities which reinforces the content of the course in a virtual format. (Prerequisite: MATH111) View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN138>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN140 Introduction to Environmental Science with Lab (4 semester hours)

This course will give students the opportunity to learn and connect with the central issues of environmental science. This is a course primarily for the non-scientist. The basic concepts of ecology, geography, chemistry, economics, ethics, policy, and many other disciplines will be used to examine the overarching role that humans play in our planet's environmental problems and successes. The laboratory exercises will allow students to use hands-on, field, and/or Internet resources to collect and evaluate qualitative and quantitative data regarding the human-environment relationship. Lifestyle examination, ethical considerations, and critical analysis of individual contributions to local and global impacts in regards to environmental sustainability will be emphasized in the laboratory portion of this course.

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN140>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN202 Introduction to Microbiology (3 semester hours)

Introduction to Microbiology includes the study of the history of microbiology, as well as the fundamentals of microbe staining, culture, and growth. We will also focus on sterilization, disinfection and antimicrobial therapies that help to keep microbes in check. Finally, we will focus on microbial infections of the skin, eyes, and wounds as well as the urogenital, respiratory, oral gastrointestinal and nervous systems. NOTE: Students may take either BIOL202 or SCIN202 for credit, but not both versions of microbiology. (Prerequisites: BIOL133 or SCIN130) View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN202>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN206 Marine Biology (3 semester hours)

This course covers key principles and topics in oceanography and marine biology. It is focused on applied problems; it will use problems involving the basic biology of organisms, taxonomy, marine ecosystems, pollution, fisheries, aquaculture and sustainable marine resources to investigate topics in marine biology. (Prerequisites: SCIN130 or BIOL134) View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN206>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN211 Principles of Genetics with Lab (4 semester hours)

This course is an introduction to the basic principles of human genetics and heredity. Students will investigate both classical Mendelian genetics and modern molecular genetics. Topics include the transmission of genes from one generation to the next, the molecular structure of genes, the regulation of gene expression, genes and cancer, genetic technology, genetically modified foods, gene therapy and population genetics. The course is designed for all students interested in human genetics, the application of genetic principles and genetic technology. (Prerequisites: BIOL133 or SCIN130) View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN211>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN233 Physics I with Lab (4 semester hours)

This fundamental Physics course is the first of two courses that examine basic Physics using Calculus techniques. Topics include Mechanics, Fluids, Oscillations, Waves, Temperature, Heat, and Thermodynamics. The course involves study through interactive simulation laboratories designed to help reinforce and build upon the concepts presented in the lectures. (Prerequisite: MATH225) View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN233>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN234 Physics II with Lab (4 semester hours)

This fundamental physics course is the second of two courses that examine basic physics using Calculus techniques. The course covers Electric Forces and Fields, Electric Currents and Circuits, Magnetic Forces and Fields, Electromagnetic Induction, Alternating Current, Electromagnetic Waves, Reflection and Refraction of Light, Optical Instruments, Interference and Diffraction, and an Introduction to Quantum and Particle Physics. (Prerequisites: SCIN233 and MATH226) View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN234>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN261 Introduction to Planetary Science with Lab (4 semester hours)

This course is a tour of the planets and moons of the solar system, and an introduction to their internal structures, atmospheres, and surface features. Processes that form planets and act continually to change them (e.g., earthquakes, volcanoes, giant impacts) are discussed, as are comets, asteroids, rings, and life. Information gained from spacecraft missions is highlighted. In the laboratory component, students will engage in planetary science inquiry using online interactive simulations and data gathered from space missions and ground-based observatories to help reinforce and build upon the concepts presented in the lecture portion of the course. (Prerequisite: SCIN134)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN261>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN311 Fishery Biology (3 semester hours)

This course will present the principles and methods used in studying the biology of fishes, the ecological requirements of freshwater and anadromous fishes, and the principles and practices in sport fishery management. Students will participate in case studies and critically analyze existing fisheries management plans to ascertain their effectiveness and scientific validity. This course will also emphasize the value of collaboration in effective fisheries management. (Prerequisites: BIOL134, SCIN130, or SCIN206)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN311>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN314 Botany (3 semester hours)

An introduction to the structure, processes, and reproduction of higher plants with an emphasis on flowering plants. This course will use an integrative approach to examine the relationships between structure and function, diversity, and evolution. (Prerequisites: SCIN130 or BIOL134)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN314>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN316 Plant Identification, Taxonomy, and Systematics (3 semester hours)

An introduction to classification and evolution of vascular plants, with emphasis on flowering plants (angiosperms). This course will use structural terminology, characteristics of major plant families, and systematics. Student will use taxonomic keys, floras, and manuals for species identification. (Prerequisites: SCIN130 or BIOL134)
View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN316>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN400 Research Methods in Natural Sciences (3 semester hours)

This course focuses on providing students with the essential elements of scientific research and matters associated with the scientific method; experimental and non-experimental research design; and statistical data analyses. Students will become familiar with the current methodologies, tools, and instruments of modern research, such as sampling, test design, data collection reporting, and the scientific writing process. In addition, each student will develop a proposal to conduct an original research project in the field of natural sciences. This proposal will then be used as the basis for an independent research project in SCIN499. The University recommends that students do not attempt this course until they have completed all required courses for the natural sciences major and all required courses in the biology or earth science concentration. (Biology concentration prerequisites are BIOL240, BIOL241, EVSP416, SCIN202, and SCIN211. Earth Science concentration prerequisites are GEOG200, SCIN138, and SCIN261.)
View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN400>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN401 Mammalogy (3 semester hours)

The goal of this course is to introduce students to the biology of the class Mammalia. The course will include a survey of the origins, evolution, diversity, and adaptations of mammals to diverse environments. Topics include taxonomy, reproduction, sensory perception, herbivory, population cycles and behavior. Students will use case studies to apply the concepts of mammalogy to broader problems of species management, biodiversity, and the effects of development and habitat fragmentation on mammals. (Prerequisites: SCIN130 or BIOL134)
View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN401>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN402 Ornithology (3 semester hours)

Ornithology is the study of the anatomy, physiology, and behavior of birds. In this course, students will integrate ornithological study with the principles of bird conservation and management. Students will learn to identify birds by sight and call, and will learn the names of the major orders and families of birds throughout the world. (Prerequisites: SCIN130 or BIOL134)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN402>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN490 Independent Study - Natural Sciences (3 semester hours)

An opportunity for students to pursue an independent research project or examine a specific area in the natural sciences under the mentorship of a single professor. Course is open to upper division students only. Participation is at the discretion of the natural sciences program director. The course will typically require students to confer regularly with the faculty member and produce a major research paper (25+ pages); there will be no examination. Students will submit a proposal prior to the start of the project, a rough draft of the paper during the course, and a final paper and presentation at the end of the course, all of which will count toward the final grade. To be eligible for an independent study, students must be enrolled in a bachelors degree program, must have completed 60 hours at APUS toward their current degree program, and should have already contacted a professor and gained approval for the independent study topic. Once these conditions are met the student should contact their academic advisor. Once the course is open the student must complete an official online registration for the course. (Prerequisite: Senior status)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN490>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.

SCIN499 Senior Seminar in Natural Sciences (3 semester hours)

Instruction in analysis and presentation of original scientific research. Each student will carry out an original independent research project which was proposed in SCIN400. After data collection, each student will analyze and interpret data collected from the experimental project executed as part of this upper-level course. Each student will prepare a scientific paper and a live webinar presentation of their research. This is considered the capstone course for students completing majors within the natural sciences. (Prerequisites: SCIN400 and completion of a minimum of 106 hours towards your program)

View the course schedule (<https://www.apus.edu/course-schedule/details.html?c=SCIN499>) to find out details about each course including prerequisites, course objectives, course materials, a snapshot of the syllabi, and session dates.