Studies in the Arts & Sciences: Science

All students must complete 8 semester hours in Science. Within these 8 semester hours, students must also complete a physical or biological lab science class. Review the list of classes to determine courses of interest for your first semester at Elon University.

The list of classes below are offered in fall 2024 and will contribute toward completing the Science requirement. This list is subject to change. The most up to date list is available in OnTrack. For more information on how to navigate OnTrack, go to the Office of Academic Advising video tutorials playlist: How to Use OnTrack.

Course Information			Semester Hours
Biology (BIO) 1012: Topics in General Biology			**3**
This topical approach to the foundational concepts of biology examines theories and issues in biology as they relate to varying special topics selected by the instructor.			
Biology (BIO) 1013: General Biology Lab			**1**
This two-hour laboratory provides experiences to complement selected foundational concepts from BIO 1012. To satisfy the Elon Core Curriculum laboratory science requirement, BIO 1012 and 1013 should be taken concurrently. No credit to students with prior credit for BIO 1113. No credit toward biology major or minor.			
Biology (BIO) 1064: Biology, The Science of Life			**4**
The goal of this course for the non-science major is to promote biological literacy and a working knowledge of biological concepts gained through laboratory work, group collaboration and class discussion. Laboratory experience will be integrated with concurrent lecture activities. Course topics will include the nature of science, biodiversity, genes and genetics, evolution and human impacts on the biosphere. No credit toward the biology major or minor. Satisfies the Elon Core Curriculum laboratory requirement.			
Biology (BIO) 1112: Introductory Cell Biology			**3**

In this introduction to organization and function at the cellular level, topics of study include basic cell chemistry and structure, transport, energetics and reproduction.		
Biology (BIO) 1113: **Cell Biology Laboratory**	**1**	
Students have three hours of laboratory experience per week with topics complementing concurrent study in BIO 1112.		
Biology (BIO) 1514: Biodiversity	**4**	
This course is an integrated lab/lecture, which will teach students lab and field techniques to measure and understand the diversity of the living world. Concepts include the measurement of biodiversity, the evolutionary relationships among organisms and the construction of phylogenies.		
Chemistry (CHM) 1110: General Chemistry I	**4**	
This course introduces fundamental principles of chemistry with special emphasis on developing skills in quantitative reasoning. Topics include stoichiometry, nomenclature, gases, atomic structure and periodicity, theories of chemical binding and thermochemistry.		
Chemistry (CHML) 1110: General Chemistry I Lab		
Applications of principles learned in CHM 1110. Concurrent enrollment in CHM 1110 required.		
Chemistry (CHM) 1120: General Chemistry II	**4**	
The study of fundamental chemical principles continues with chemical kinetics, liquid/solid states, chemical equilibrium (gas phase and acid/base), thermodynamics and electrochemistry.		
Chemistry (CHML) 1120: General Chemistry II		**0**
Applications of principles learned in CHM 1120. Concurrent enrollment in CHM 1120 required.		
Computer Science (CSC) 1100: Data Science and Visualization	**4**	

The Internet is full of rich data sources that anyone can use to answer questions and solve problems. How can we process this data to uncover interesting patterns? How can we visualize this data to reveal trends or to spur additional questions? This course teaches students how to access online data, write programs to analyze the data, and use visualization tools to describe the patterns we find in a compelling way. Students of any major are welcome.	
Computer Science (CSC) 1300: Computer Science I	**4**
This introduction to programming and problem solving emphasizes applications from quantitative disciplines and incorporates in class programming experiences.	
Environmental Studies (ENS) 1110: **Introduction to Environmental Science (lecture)**	**3**
This course explores the fundamental principles of the biological and physical sciences behind natural ecosystems. The central focus is the study of ecosystem function, human impact and techniques of environmental assessments. Students consider different worldviews and the development of solutions.	
Environmental Studies (ENS) 1130: Intro to Environmental Science Lab	**1**
Students will be introduced to techniques for environmental assessment. The focus is on field research as applied to environmental management.	
Environmental Studies (ENS) 1710: Intro to Environmental Science with integrated lab	**4**
This integrated lab-lecture course will explore environmental-social questions of broad importance to sustainable, healthy, and equitable living in the 21st century and beyond. Through investigations of topics such as biodiversity and the current mass extinction, food and sustainable agriculture, and climate change and its impacts on the world around us, we will come to understand how Earth systems transfer matter and energy over space and time, how human health and environmental conditions are inseparably interrelated, and how societal inequities and injustices are exacerbated by environmental issues. Along the way, we'll practice asking answerable scientific questions and frame testable hypotheses about environmental phenomena; interpreting data in various forms and use it to craft a scientific argument; and connecting scientific concepts to our diverse lives and academic interests. This course fulfills the laboratory science course requirement for the Elon Core Curriculum, and the Introduction to Environmental Science lab/lecture requirements for ENS majors and minors.	

Environmental Studies (ENS) 1010: Current Issues in Environmental Science	**4**
Designed for non-science majors, this course focuses on reading, interpreting and evaluating facts behind environmental issues and exploring the implications for science and human society. Topics will focus on understanding environmental processes such as energy flow and matter within ecosystems and human relationships with these environmental and ecological systems. Themes of sustainability will be woven throughout the course.	
Exercise Science (ESS) 1110: Introduction to Exercise Science	**4**
This course is an introduction to the interdisciplinary field of exercise science. This includes an examination of the scientific basis underlying the core content areas of biomechanics; exercise physiology; motor behavior; nutrition; and the psychology of physical activity. Students gain an understanding of current exercise science theories and apply core concepts through integrated laboratory experiences.	
Mathematics (MTH) 2310: Linear Algebra	**4**
This introductory course in linear algebra includes systems of linear equations, matrices, determinants, vector spaces, eigenvalues, eigenvectors, orthogonality and linear transformations including a variety of applications. Students will begin expanding from a computational focus to a theoretical one by focusing on definitions, considering the proofs of the major theorems and writing beginning proofs.	
Mathematics (MTH) 2510: Calculus II	**4**
Students explore applications of the definite integral, differentiation and integration of transcendental functions, techniques of integration, indeterminate forms, improper integrals, infinite sequences and series. Students will be introduced to abstract mathematical thought through formal definitions and proofs.	
Mathematics (MTH) 2520: Multivariable Calculus and Analytical Geometry	**4**
This course provides a study of advanced techniques of differential and integral calculus, including plane curves and polar coordinates, three-dimensional analytic geometry including vectors, differentiation and integration of multivariable functions and applications.	
Physics (PHY) 1700: Electroacoustics	**4**

This course is an introduction to analog electrical circuits in sound reproduction, architectural acoustics, and psychoacoustics. Significant topics in the course include a survey of microphone and loudspeaker technologies, bandpass and crossover filtering, room measurement metrics and techniques, perception of sound intensity, and auditory spatial awareness.	
Physics (PHY) 2210: University Physics I	**4**
This survey of topics in classical physics is designed for students majoring in math, physics, computer science, chemistry, or engineering. Topics include kinematics, dynamics, and thermodynamics. Laboratory Included.	
Physics (PHY) 2220: University Physics II	**4**
This survey of topics in classical physics is designed for students majoring in math, physics, computer science, chemistry, or engineering. Topics include electrostatics, magnetostatics, electrodynamics, and waves. Laboratory Included.	
Physics (PHY) 2040: Planetary Astronomy	**4**
Planetary astronomy involves the study of our solar system and other planetary systems. Topics include the Moon, the Sun, planetary motion, planetary formation, planetary geology, extrasolar planets, and life in the universe.	
Science (SCI) 1210: Science Without Borders	**4**
This course will challenge every student to think critically about the biggest ideas produced by the natural sciences. Students will learn how to think like a scientist as they explore the development of, evidence supporting and applications for these ideas, which span atoms, the universe and everything in between. Also, student groups will use the scientific method to approach complex “real-world” problems that intersect with the natural sciences.	
Science (SCI) 1260: Journey Through Time	**4**
We are one of several million species that all live on a relatively small rock in space, but how did we and everything else get here, and where are we going? Getting answers to these questions would shed light on just about every discipline and worldview. In this course, students will explore the origins of the universe, stars and planets, living organisms, humans, civilization, and more. Emphasis will be placed on empirical evidence and what inferences are justified from that evidence.	