

Grayson College Course Catalog

Overview

The Biological and Physical Sciences major at Grayson College is designed for transfer to four-year institutions. For students planning to pursue a Chemistry, Geography, Geology, and/or Physics major and transfer to a four-year institution, as a general rule, students should follow the **Associate of Science Degree in Biological and Physical Sciences** at Grayson College as part of the **Science and Technology Career Pathway**. All students are advised to counsel with the university/college of their choice to determine which courses offered at Grayson College are applicable to that institution's bachelor's degree in their desired major.

AS Degree Requirements

Associate of Science - Biological and Physical Sciences

Subject	Semester Hours
ENGL 1301 (Composition I)	3
Mathematics Core	3
American History Core	3
Life & Physical Science Core	3
Life & Physical Science Lab (CAO)	1
Communication Core	3
American History Core	3
Component Area Option Core	3
Life & Physical Science Core	3
Life & Physical Science Lab (CAO)	1
Creative Arts Core	3
Language, Philosophy, Cultural Core	3
Biological & Physical Science Elective	3
Government/Political Science Core	3
Biological & Physical Science Elective	3
Biological & Physical Science Lab	1
Social & Behavioral Sciences Core	3
Government/Political Science Core	3
Biological & Physical Science Elective	3
Biological & Physical Science Lab	1
Biological & Physical Science Elective	3
Biological & Physical Science Lab	1
60	

Note: All sciences must be science major courses. Students are encouraged to select electives that meet the graduation requirement of the senior institution.

*Please review your Student Planner or contact your Student Success Coach/Faculty Mentor to review which courses may be used to fill this degree requirement.

Core

Students earning an Associate of Arts, Associate of Science, or Associate of Arts in Teaching Degree at Grayson College must complete 42 hours of a state mandated Core Curriculum in addition to major courses and electives in their particular area of interest. Following are the Core Curriculum Component Areas. [Click here](#) for allowable courses within each component area.

Component Areas	Required Hours
010 Communication	6
020 Mathematics	3
030 Life and Physical Sciences	6

040 Language, Philosophy, and Culture	3
050 Creative Arts	3
060 American History	6
070 Government/Political Science	6
080 Social and Behavioral Sciences	3
090 Component Area Option	6
Total	42

BIOL 1106 - Biology I (Lab)

This laboratory-based course accompanies Biology 1306, Biology I. Laboratory activities will reinforce the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Study and examination of the concepts of cytology, reproduction, genetics, and scientific reasoning are included.

Grade Basis: L

Credit hours: 1.0

Lab hours: 2.0

Prerequisites:

- [BIOL 1306](#) - Biology I
-

BIOL 1107 - Biology II (lab)

This laboratory-based course accompanies Biology 1307, Biology II. Laboratory activities will reinforce study of the diversity and classification of life, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals.

Grade Basis: L

Credit hours: 1.0

Lab hours: 2.0

Prerequisites:

- [BIOL 1307](#) - Biology II

Restrictions:

- College readiness in reading required.
-

BIOL 1108 - Biology I (lab)

This laboratory-based course accompanies BIOL 1308, Biology for Non-Science Majors I. Laboratory activities will reinforce a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction

Grade Basis: L

Credit hours: 1.0

Lab hours: 2.0

Prerequisites:

- [BIOL 1308](#) - Biology for Non-Science Majors I

Restrictions:

- College readiness in reading required.
-

BIOL 1109 - Biology Lab for Non-Science Majors II

This laboratory-based course accompanies BIOL 1309, Biology for Non-Science Majors II. Laboratory activities will reinforce a survey of biological principles with an emphasis on humans, including evolution, ecology, plant and animal diversity, and physiology.

Grade Basis: L
Credit hours: 1.0
Lab hours: 2.0
Prerequisites:

- [BIOL 1309](#) - Biology for Non-Science Majors II

Restrictions:

- College readiness in reading required.
-

BIOL 1306 - Biology I

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, ecology, and scientific reasoning are included.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required
-

BIOL 1307 - Biology II

The diversity and classification of life will be studied, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required
-

BIOL 1308 - Biology for Non-Science Majors I

Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required.
-

BIOL 1309 - Biology for Non-Science Majors II

This course will provide a survey of biological principles with an emphasis on humans, including evolution, ecology, plant and animal diversity, and physiology.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required
-

BIOL 1322 - Nutrition & Diet Therapy

Study of the chemical, physical, and sensory properties of food; nutritional quality; and food use and diet applications. Prevention of illnesses such as cancer, heart disease, osteoporosis, gastrointestinal disorders and obesity discussed. Healthful diet and lifestyle related to food and nutrition controversies are critically evaluated.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Restrictions:

- College readiness in reading required.
-

BIOL 2101 - Anatomy & Physiology Lab I

The lab provides a hands-on learning experience for exploration of human system components and basic physiology. Systems to be studied include integumentary, skeletal, muscular, nervous, and special senses.

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [BIOL 2301](#) - Anatomy and Physiology I (lecture)

Restrictions:

- College readiness in reading required
-

BIOL 2102 - Anatomy & Physiology Lab 2

The lab provides a hands-on learning experience for exploration of human system components and basic physiology. Systems to be studied include endocrine, cardiovascular, immune, lymphatic, respiratory, digestive (including nutrition), urinary (including fluid and electrolyte balance), and reproductive (including human development and genetics).

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [BIOL 2101](#) - Anatomy & Physiology Lab I
- [BIOL 2301](#) - Anatomy and Physiology I (lecture)

Restrictions:

- College readiness in reading required.
-

BIOL 2120 - Microbiology Lab for Non-Science Majors

Study of the morphology, physiology, and taxonomy of representative groups of pathogenic and nonpathogenic microorganisms. Pure cultures of microorganisms grown on selected media are used in learning laboratory techniques. Includes a brief preview of food microbes, public health, and immunology.

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [BIOL 2101](#) - Anatomy & Physiology Lab I
- [BIOL 2301](#) - Anatomy and Physiology I (lecture)

Restrictions:

- College readiness in reading required.
-

BIOL 2121 - Microbiology Lab for Science Majors

This laboratory-based course accompanies Biology 2321, Microbiology for Science Majors. Laboratory activities will reinforce principles of microbiology, including metabolism, structure, function, genetics, and phylogeny of microbes. The course will also examine the interactions of microbes with each other, hosts, and the environment.

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [BIOL 2321](#) - Microbiology for Science Majors
-

BIOL 2301 - Anatomy and Physiology I (lecture)

Anatomy and Physiology I is the first part of a two-course sequence. It is a study of the structure and function of the human body including cells, tissues and organs of the following systems: integumentary, skeletal, muscular, nervous and special senses. Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [BIOL 2101](#) - Anatomy & Physiology Lab I

Restrictions:

- College readiness in reading required
-

BIOL 2302 - Anatomy and Physiology II

Anatomy and Physiology II is the second part of a two-course sequence. It is a study of the structure and function of the human body including the following systems: endocrine, cardiovascular, immune, lymphatic, respiratory, digestive (including nutrition), urinary (including fluid and electrolyte balance), and reproductive (including human development and genetics). Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [BIOL 2101](#) - Anatomy & Physiology Lab I
- [BIOL 2301](#) - Anatomy and Physiology I (lecture)

Restrictions:

- College readiness in reading required.
-

BIOL 2320 - Microbiology for Non-Science Majors

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health.

Grade Basis: L

Credit hours: 3.0

Lab hours: 3.0

Prerequisites:

- [BIOL 2101](#) - Anatomy & Physiology Lab I

- [BIOL 2301](#) - Anatomy and Physiology I (lecture)

Restrictions:

- College readiness in reading required.
-

BIOL 2321 - Microbiology for Science Majors

Principles of microbiology, including metabolism, structure, function, genetics, and phylogeny of microbes. The course will also examine the interactions of microbes with each other, hosts, and the environment. Laboratory activities will reinforce principles discussed in lecture.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [BIOL 1306](#) - Biology I
- [BIOL 1307](#) - Biology II
- [CHEM 1311](#) - General Chemistry I

Restrictions:

- College readiness in reading
-

BIOL 2404 - Anatomy & Physiology

Study of the structure and function of human anatomy, including neuroendocrine, integumentary, musculoskeletal, digestive, urinary, reproductive, respiratory, and circulatory systems. Content may be either integrated or specialized

Grade Basis: L

Credit hours: 3.0

Lecture hours: 4.0

Lab hours: 3.0

Restrictions:

- College readiness in reading required
-

GEOG 1302 - Human Geography

This course introduces students to fundamental concepts, skills, and practices of human geography. Place, space, and scale serve as a framework for understanding patterns of human experience. Topics for discussion may include globalization, population and migration, culture, diffusion, political and economic systems, language, religion, gender, and ethnicity.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

GEOG 1303 - World Regional Geography

This course is an introduction to the world's major regions seen through their defining physical, social, cultural, political, and economic features. These regions are examined in terms of their physical and human characteristics and their interactions. The course emphasizes relations among regions on issues such as trade, economic development, conflict, and the role of regions in the globalization process.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

GEOL 1101 - Earth Sciences LAB I

This laboratory-based course accompanies GEOL 1301, Earth Sciences I. Activities will cover methods used to collect and analyze data in geology, meteorology, oceanography, and astronomy.

Grade Basis: L
Credit hours: 1.0
Lab hours: 2.0

Prerequisites:

- [GEOL 1301](#) - Earth Science

Restrictions:

- College readiness in reading required.
-

GEOL 1103 - Physical Geology LAB

This laboratory-based course accompanies GEOL 1303, Physical Geology. Laboratory activities will cover methods used to collect and analyze earth science data.

Grade Basis: L
Credit hours: 1.0
Lab hours: 2.0

Prerequisites:

- [GEOL 1303](#) - Physical Geology

Restrictions:

- College readiness in reading required.
-

GEOL 1104 - Historical Geology LAB

This laboratory-based course accompanies GEOL 1304, Historical Geology. Laboratory activities will introduce methods used by scientists to interpret the history of life and major events in the physical development of Earth from rocks and fossils.

Grade Basis: L
Credit hours: 1.0
Lab hours: 2.0

Prerequisites:

- [GEOL 1304](#) - Historical Geology

Restrictions:

- College readiness in reading required.
-

GEOL 1105 - Environmental Science LAB

This laboratory-based course accompanies GEOL 1305, Environmental Science (lecture). Activities will cover methods used to collect and analyze environmental data.

Grade Basis: L
Credit hours: 1.0
Lab hours: 2.0

Prerequisites:

- [GEOL 1305](#) - Environmental Geology

Restrictions:

- College readiness in reading required.
-

GEOL 1301 - Earth Science I

Survey of geology, meteorology, oceanography, and astronomy.

Grade Basis: L

Credit hours: 3.0
Lecture hours: 3.0
Restrictions:

- College readiness in reading required.
-

GEOL 1303 - Physical Geology

Introduction to the study of the materials and processes that have modified and shaped the surface and interior of Earth over time. These processes are described by theories based on experimental data and geologic data gathered from field observations.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required.
-

GEOL 1304 - Historical Geology

A comprehensive survey of the history of life and major events in the physical development of Earth as interpreted from rocks and fossils.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required.
-

GEOL 1305 - Environmental Science

A survey of the forces, including humans, which shape our physical and biologic environment, and how these affect life on Earth. Introduction to the science and policy of global and regional environmental issues, including pollution, climate change, and sustainability of land, water, and energy resources.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0

Restrictions:

- College readiness in reading required.
-

PHYS 1101 - College Physics I (lab)

This laboratory-based course accompanies PHYS 1301, College Physics I. Laboratory activities will reinforce fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, mechanical waves and sound, physical systems, Newton's Laws of Motion, and gravitation and other fundamental forces; emphasis will be on problem solving.

Grade Basis: L
Credit hours: 1.0
Lab hours: 3.0

Prerequisites:

- [PHYS 1301](#) - College Physics I

Restrictions:

- College readiness in reading and math required.
-

PHYS 1102 - College Physics II (lab)

This laboratory-based course accompanies PHYS 1302, College Physics II. Laboratory activities will reinforce fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, optics, and modern physics topics; with emphasis on problem solving.

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [PHYS 1302](#) - College Physics II

Restrictions:

- College readiness in reading and math required.
-

PHYS 1103 - Stars and Galaxies

Laboratory in the study of stars, galaxies, and the universe outside our solar system.

Grade Basis: L

Credit hours: 1.0

Lab hours: 2.0

Prerequisites:

- [PHYS 1303](#) - Stars and Galaxies

Restrictions:

- College readiness in reading and math required.
-

PHYS 1104 - Solar System (lab)

Laboratory in the study of the sun and its solar system, including its origin.

Grade Basis: L

Credit hours: 1.0

Lab hours: 2.0

Prerequisites:

- [PHYS 1304](#) - Solar System

Restrictions:

- College readiness in reading is required.
-

PHYS 1115 - Physical Science Laboratory I

Course, designed for non-science majors, that surveys topics from physics, chemistry, geology, astronomy, and meteorology.

Grade Basis: L

Credit hours: 1.0

Lab hours: 2.0

Prerequisites:

- [PHYS 1315](#) - Physical Science I

Restrictions:

- College readiness in reading is required.
-

PHYS 1301 - College Physics I

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, mechanical waves and sound, physical systems, Newton's Laws of Motion, and gravitation and other fundamental forces; with emphasis on problem solving.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [MATH 1314](#) - College Algebra

Restrictions:

- College readiness in reading and math required.
-

PHYS 1302 - College Physics II

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, optics, and modern physics topics; with emphasis on problem solving.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [PHYS 1301](#) - College Physics I

Restrictions:

- Successful completion with a grade of C or better in PHYS 1401 is required
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PHYS 1303 - Stars and Galaxies

Study of stars, galaxies, and the universe outside our solar system.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Restrictions:

- College readiness in reading and math required.
-

PHYS 1304 - Solar System

Study of the sun and its solar system, including its origin

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Restrictions:

- College readiness in reading and math required.
-

PHYS 1315 - Physical Science I

Course designed for non-science majors that surveys topics from physics, chemistry, geology, astronomy, and meteorology.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Restrictions:

- College readiness in reading and math required.
-

PHYS 2125 - University Physics Laboratory I

Basic laboratory experiments supporting theoretical principles presented in PHYS 2325 involving the principles and applications of classical mechanics, including harmonic motion and physical systems; experimental design, data collection and analysis, and preparation of laboratory reports.

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [MATH 2413](#) - Calculus I
- [PHYS 2325](#) - University Physics I

Restrictions:

- College readiness in reading, and math required.
-

PHYS 2126 - University Physics Laboratory II

Laboratory experiments supporting theoretical principles presented in PHYS 2326 involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics; experimental design, data collection and analysis, and preparation of laboratory reports.

Grade Basis: L

Credit hours: 1.0

Lab hours: 3.0

Prerequisites:

- [PHYS 2326](#) - University Physics II

Restrictions:

- College readiness in reading, and math required.
-

PHYS 2325 - University Physics I

Fundamental principles of physics, using calculus, for science, computer science, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [MATH 2414](#) - Calculus II

Restrictions:

- College readiness in reading and math required.
-

PHYS 2326 - University Physics II

Principles of physics for science, computer science, and engineering majors, using calculus, involving the principles of electricity and magnetism, including circuits, electromagnetism, waves, sound, light, and optics.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

Prerequisites:

- [PHYS 2325](#) - University Physics I

Restrictions:

- College readiness in reading and math required.

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Grayson College

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