GEOSCIENCES MAJOR WITH EARTH SCIENCE EDUCATION OPTION

Program Curriculum

Code	Title	Credits
Degree Core Requirements		
GEOS 2004	Geosciences Career and Professional Development	3
GEOS 2024	Earth's Dynamic Systems	6
GEOS 2444	Geoscience Field Observations	2
GEOS 3204	Sedimentology-Stratigraphy	3
GEOS 3404	Elements of Structural Geology	3
GEOS 3504	Mineralogy	3
Subtotal		20
Major Requirements		
GEOS 4024	Senior Seminar [1]	3
GEOG 2084	Principles of Geographic Information Systems	3
CHEM 1035	General Chemistry [1]	3
CHEM 1045	General Chemistry Laboratory [1]	1
STAT 3005	Statistical Methods [1]	3
or STAT 3615	Biological Statistics	
Select one of the following:		3
GEOS 3024	Computational Methods in the Geosciences	
CS 1044	Introduction to Programming in C	
CS 1064	Introduction to Programming in Python	
Subtotal		16
Option Required Courses		
Select one of the following:		10-12
Sequence 1 [2]		
MATH 1025	Elementary Calculus [3]	
MATH 1026	Elementary Calculus [3]	
PHYS 2205 & PHYS 2215	General Physics and General Physics Laboratory [3]	
Sequence 2 [2]		
MATH 1225	Calculus of a Single Variable [3]	
MATH 1226	Calculus of a Single Variable [3]	
PHYS 2305	Foundations of Physics [3]	
BIOL 1105 & BIOL 1115	Principles of Biology and Principles of Biology Laboratory [3]	4
Select one of the following:		4
CHEM 1036 & CHEM 1046	General Chemistry and General Chemistry Laboratory [3]	
BIOL 1106 & BIOL 1116	Principles of Biology and Principles of Biology Laboratory [3]	
PHYS 2206 & PHYS 2216	General Physics and General Physics Laboratory [3]	
or PHYS 230	Foundations of Physics	
GEOG 1514	Introduction to Meteorology	3
EDCI 4024	Humanizing the K-12 Classroom	3
Select one of the following:		3
EDEP 2444	Motivating Yourself and Others [3]	
or EDEP 237	Educational Psychology for PK-12 Teachers	
HD 1004	Childhood and Adolescence	
PSYC 1004	Introductory Psychology	
EDCI 3024	Issues of Schooling in the United States [3]	3
PHYS 1055	Introduction to Astronomy [3]	3
or GEOS 2014	Mission to the Planets	
GEOS 1024	Earth Resources, Society, and Environment [3]	3
or GEOS 1064	Climate History: Past, Present, and Future	
GEOS 3034	Oceanography	3
GEOS 3014	Environmental Geosciences	3
GEOS 3044	Geosciences Outreach	2
Subtotal		44-46
Elective Courses		
Select a minimum of 11-12 credits of the following:		11-12
Subtotal		11-12
Free Electives		
Complete remaining credit hours needed to satisfy degree 120 credit hour requirement		8-11
Subtotal		8-11
Pathways to General Education [4]		
Pathways Concept 1 - Discourse		
ENGL 1105	First-Year Writing (1F)	3
ENGL 1106	First-Year Writing (1F)	3
Pathways Concept 1 - Discourse (Advanced) completed by major/option requirements		
Pathways Concept 2 - Critical Thinking in the Humanities		
Select six credits in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02)		6
Pathways Concept 3 - Reasoning in the Social Sciences		
Pathways Concept 3 - Reasoning in the Social Sciences completed by major/option requirements		
Pathways Concept 4 - Reasoning in the Natural Sciences		
Pathways Concept 4 - Reasoning in the Natural Sciences completed by major/option requirements		
Pathways Concept 5 - Quantitative and Computational Thinking		
Pathways Concept 5 - Quantitative and Computational Thinking (Foundation) completed by major/option requirements		
Pathways Concept 5 - Quantitative and Computational Thinking (Advanced) completed by major/option requirements		
Pathways Concept 6 - Critique and Practice in Design and the Arts		
Select three credits in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A)		3
Select three credits in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D)		3
Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States		
Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States completed by major/option requirements		
Subtotal		18
Total Credits		**117-123**

[1] Credits may double-count for Major Requirements and Pathways.
[2] See University Course Catalog for prerequisites.

[3] Credits may double-count for Option Requirements and Pathways.
[4] If requirements completed as outlined, **27 credit hours of Pathways will be satisfied** by major/option requirements. Pathways requirements and approved courses are available online: http://www.cle.prov.vt.edu/guides/index.html (http://www.cle.prov.vt.edu/guides/)

Notes:
Semester offered is subject to change. Please consult the timetable or your advisor for current information.

Graduation Requirements

Graduation requires completion of a minimum of 120 credit hours with a GPA of 2.0 or greater for all hours attempted. In addition, students must have an in-major GPA of 2.5 or greater. The in-major GPA is calculated from all GEOS courses.

Prerequisites

There are no hidden prerequisites, although some of the courses listed are prerequisites for other courses. Even when listed, prerequisites are subject to change. Please consult University Course Catalog for current information.

Acceptable Substitutions

- GEOS 1004 Earth Science: Our Past, Present, and Future, GEOS 1104 Introduction to Earth Sciences Laboratory, GEOS 1014 Evolution of the Earth-Life System for GEOS 2024 Earth's Dynamic Systems
- GEOS 2104 Elements of Geology, GEOS 1014 Evolution of the Earth-Life System for GEOS 2024 Earth's Dynamic Systems
- CHEM 1055 General Chemistry for Chemistry Majors or CHEM 1055H Honors General Chem for Majors for CHEM 1035 General Chemistry
- CHEM 1065 General Chemistry for Chemistry Majors Lab for CHEM 1045 General Chemistry Laboratory
- ENGL 1204H Honors Freshman English for ENGL 1106 First-Year Writing
- COMM 1015 Communication Skills for ENGL 1105 First-Year Writing and COMM 1016 Communication Skills for ENGL 1106 First-Year Writing

Foreign Language Requirement

Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.

Satisfactory Progress Toward Degree (Policy 91)

1. By 60 hours attempted at Virginia Tech, students must have completed the following courses:
   - GEOS 2004 Geosciences Career and Professional Development, GEOS 2024 Earth's Dynamic Systems (or GEOS 1004 Earth Science: Our Past, Present, and Future, GEOS 1104 Introduction to Earth Sciences Laboratory, GEOS 1014 Evolution of the Earth-Life System or GEOS 2104 Elements of Geology, GEOS 1014 Evolution of the Earth-Life System), GEOS 2444 Geoscience Field Observations, GEOS 3504 Mineralogy
   - MATH 1025 Elementary Calculus or MATH 1225 Calculus of a Single Variable
   - CHEM 1035 General Chemistry, CHEM 1045 General Chemistry Laboratory
   - PHYS 2205 General Physics, PHYS 2215 General Physics Laboratory or PHYS 2305 Foundations of Physics
2. Students must achieve an overall GPA of 2.0 and an in-major GPA of 2.5 upon attempting 15 GEOS credit hours (including transfer credit, courses completed with a grade of "W", advanced placement or IB credit)