

GEOSCIENCES MAJOR WITH GEOPHYSICS 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	3
GEOS 3204	Sedimentology-Stratigraphy	3
GEOS 3404	Elements of Structural Geology	3
GEOS 3504/ MSE 3104	Mineralogy	3
Subtotal		21
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		
MATH 1225	Calculus of a Single Variable ²	4
MATH 1226	Calculus of a Single Variable ²	4
MATH 2204	Introduction to Multivariable Calculus	3
MATH 2214	Introduction to Differential Equations	3
MATH 2114	Introduction to Linear Algebra	3
PHYS 2305	Foundations of Physics ²	4
PHYS 2306	Foundations of Physics ²	4
GEOS 3104	Elementary Geophysics	3
Select three of the following:		11-12
GEOS 4154	Earthquake Seismology (odd years)	
GEOS 4164	Potential Field Methods in Exploration Geophysics (odd years)	
GEOS 4174	Exploration Seismology (even years)	
GEOS 4924	Tectonics	
Subtotal		39-40
Elective Courses		
GEOS 3XXX-4XXX ³		11
MATH or PHYS 3XXX-4XXX with exception of PHYS 3254 and PHYS 4224 ³		3
Subtotal		14
Free Electives		
Select 3-4 credits of free electives		3-4
Subtotal		3-4
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
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Pathways Concept 3 - Reasoning in the Social Sciences

Select six credits in Pathway 3 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G03)	6
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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
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Select three credits in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D)	3
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Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States

Select three credits in Pathway 7 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G07)	3
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Subtotal	27
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Total Credits	120-122
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¹ Credits may double-count for Major Requirements and Pathways.

² Credits may double-count for Option Requirements and Pathways.

³ See University Course Catalog for prerequisites.

⁴ If requirements completed as outlined, **18 credit hours of Pathways will be satisfied** by major/option requirements. Pathways requirements and approved courses are available online: <https://www.pathways.prov.vt.edu/>

Satisfactory Progress Toward Degree (Policy 91)

1. By 45 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 and GEOS 1104 Introduction to Earth Sciences Laboratory and GEOS 1014 Evolution of the Earth-Life System)(or GEOS 2104 Elements of Geology and GEOS 1014 Evolution of the Earth-Life System)
- GEOS 2444 Geoscience Field Observations
- GEOS 3504 Mineralogy
- MATH 1225 Calculus of a Single Variable
- CHEM 1035 General Chemistry
- CHEM 1045 General Chemistry Laboratory

2. By 60 hours attempted at Virginia Tech, students must have completed the following courses:
 - PHYS 2305 Foundations of Physics
3. 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)

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

Except when noted, all prerequisites are listed on the checksheet. 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 and GEOS 1104 Introduction to Earth Sciences Laboratory and GEOS 1014 Evolution of the Earth-Life System for GEOS 2024 Earth's Dynamic Systems
- GEOS 2104 Elements of Geology and 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 for CHEM 1035 General Chemistry
- CHEM 1065 General Chemistry for Chemistry Majors Lab for CHEM 1045 General Chemistry Laboratory
- COMM 1015 Communication Skills for ENGL 1105 First-Year Writing
- COMM 1016 Communication Skills for ENGL 1106 First-Year Writing
- MATH 2114H Introduction to Linear Algebra for MATH 2114 Introduction to Linear Algebra
- MATH 2214H Introduction to Differential Equations for MATH 2214 Introduction to Differential Equations
- MATH 2204H Introduction to Multivariable Calculus for MATH 2204 Introduction to Multivariable Calculus

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.

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