

College of Science
Department of Geosciences
Bachelor of Science in Geosciences (BS)
Geobiology and Paleobiology (GEOB) Option
For students entering under UG Catalog 2023-2024

I. PATHWAYS TO GENERAL EDUCATION REQUIREMENTS (45 credits*)		
Pathways requirements and approved courses are available online: http://www.cle.prov.vt.edu/guides/index.html		
Concept 1: Discourse (9 credits)		
(Foundation: 6 credits)	<u>ENGL 1105 (3)</u>	<u>ENGL 1106 (3)</u>
(Advanced: 3 credits)	Completed by major/option requirements	
Concept 2: Critical Thinking in the Humanities (6 credits)	_____(3)	_____(3)
(Select from approved Pathways courses)		
Concept 3: Reasoning in the Social Sciences (6 credits)	_____(3)	_____(3)
(Select from approved Pathways courses)		
Concept 4: Reasoning in the Natural Sciences (6-8 credits)	Completed by major/option requirements	
Concept 5: Quantitative and Computational Thinking (9-11 credits)		
(Foundation: 6 credits)	Completed by major/option requirements	
(Advanced: 3 credits)	Completed by major/option requirements	
Concept 6: Critique and Practice in Design and the Arts (6 credits)	_____(3 Arts)	_____(3 Design)
(Select from approved Pathways courses)		
Concept 7: Critical Analysis of Identity & Equity in the US (3 credits)	_____(3)	
(Select from approved Pathways courses, can double count with another concept)		

* If requirements completed as outlined, **18 credit hours of Pathways will be satisfied** by major/option requirements

II. GEOS Degree Core (20 credits)	_____	Credits	Sem†
GEOS 2004 Geoscience Career and Professional Development	_____	(3)	S
GEOS 2024 Earth's Dynamic Systems	_____	(6)	F
GEOS 2444 Geoscience Field Observations. <i>Pre: (1004, 1104) or 2024 or 2104</i>	_____	(2)	S
GEOS 3204 Sedimentology-Stratigraphy. <i>Pre: (1004 or 2024 or 2104)</i>	_____	(3)	F
GEOS 3404 Elements of Structural Geology. <i>Pre: (1004 or 2024 or 2104)</i>	_____	(3)	F
GEOS 3504 (MSE 3104) Mineralogy. <i>Pre: CHEM 1035</i>	_____	(3)	F

III. GEOS Major Requirements (16 credits)*	_____	Credits	Sem†	Meets Pathways:
GEOS 4024* Senior Seminar. <i>Pre: (2004, 2024, 2444, 3204, 3404, 3504)</i>	_____	(3)	S	1 advanced
GEOG 2084 Principles of Geographic Information Systems	_____	(3)		
CHEM 1035* General Chemistry Co: (MATH 1025 or MATH 1225)	_____	(3)		4
CHEM 1045* General Chemistry Laboratory Co: (1035)	_____	(1)		4
STAT 3005* Statistical Methods. <i>Pre: (MATH 1205 or MATH 1225)</i>	_____	(3)		5 advanced
OR STAT 3615* Biological Statistics. <i>Pre: (MATH 1205 or MATH 1525 or MATH 1225 or MATH 1025 or MATH 1524 or ISC 1105)</i>				
Choose 1 course from:				
GEOS 3024 Computational Methods in the Geosciences <i>Pre: MATH 1225 or MATH 1025</i>	_____	(3)		
CS 1044 Introduction to Programming in C	_____	(3)		
CS 1064 Intro to Programming in Python				

* Credits may double-count for Major Requirements and Pathways (Section I)

IV. GEOB Option Requirements (40-43 credits)*	_____	Credits	Sem†	Meets Pathways:
<i>Math and Physics: Choose one sequence from below</i>				
Sequence 1# MATH 1025* Elementary Calculus (3) MATH 1026* Elementary Calculus (3) PHYS 2205* General Physics, 2215* General Physics Laboratory (4)	OR	Sequence 2# (preferred) MATH 1225* Calculus of a Single Variable (4) MATH 1226* Calculus of a Single Variable (4) PHYS 2305* Foundations of Physics (4)		
		_____		5 foundation
		_____		5 foundation
		_____		4
BIOL 1105* & 1115 Principles of Biology and Laboratory	_____	(3), _____(1)		4
BIOL 1106* & 1116 Principles of Biology and Laboratory	_____	(3), _____(1)		4
BIOL 2704 Evolutionary Biology. <i>Pre: (1005 or 1105 or 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H)</i>	_____	(3)		
STAT 4094 Introduction to Programming in R. <i>Pre: 3005 or 3615</i>	_____	(1)		
GEOS 3044 Geosciences Outreach (2). <i>Pre: 2024 or (1004, 1014) or (2104, 1014)</i>	_____	(2-3)		
OR COMM 2004 Public Speaking (3)				
OR COMM 2014 Speech Communication (3)				
GEOS 3604 Paleontology. <i>Pre: (1004, 1014) or 2024)</i>	_____	(3)	S	
GEOS 4254 Integrative Earth System History. <i>Pre: 2024 or (1004, 1014) or (2104, 1014)</i>	_____	(3)	F	
GEOS 4234 Vertebrate Evolution. <i>Pre: 1014 or 2024 or BIOL 2704</i>	_____	(4)	S	
OR GEOS 4244 Morphology of Vertebrates. <i>Pre: (1014 or 2024 or 1054) or (BIOL 1105, 1106)</i>			S	
GEOS 4964 Field Study (approved field camp) (6)				
OR GEOS 3634 Natural History Collections and Curation (3) <i>Pre: 2024 or (1004, 1014) or (2104, 1014) or (BIOL 1105, BIOL 1106) or (BIOL 1005, BIOL 1006)</i>	_____	(6)	S	
AND GEOS 3644 Paleontological Laboratory Techniques (2) <i>Pre: 2024 or 1014 or 1054</i>			F	
AND GEOS 4994 Undergraduate Research (1)				

* Credits may double-count for Option Requirements and Pathways (Section I)

V. GEOB Option Electives (9-11 credits)

Choose 2 from the following:

BIOL 2004 Genetics (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H), (CHEM 1036 or CHEM 1056 or CHEM 1036H or CHEM 1056H or CHEM 1016 or ISC 2105) _____(3-4) _____(3-4)

BIOL 2304 (HORT 2304) Plant Biology (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H)

BIOL 2504 General Zoology (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H)

BIOL 2604 General Microbiology (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H), (CHEM 1036 or CHEM 1056 or CHEM 1036H or CHEM 1056H or ISC 2105)

BIOL 3204 Plant Taxonomy (3) Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H)

ENT 4354 (BIOL 4354) Aquatic Entomology (4) Pre: (BIOL 1005, BIOL 1006), (BIOL 1015, BIOL 1016) or (BIOL 1105, BIOL 1106, BIOL 1115, BIOL 1116)

BIOL 4404 Ornithology (4) Pre: 2804

FIW 4424 Ichthyology (4)

FIW 4334 Mammalogy (4) Pre: (BIOL 2704 or BIOL 2704H)

FIW 4344 Herpetology (4) Pre: BIOL 2704 or BIOL 2704H

GEOS 4944 Study Abroad Special Topics (max 6 credits)

GEOS 4954 Study Abroad (max 6 credits)

Choose 1 from the following:

BIOL 2804 Ecology (3) Pre: (1005 or 1105 or 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H) _____(3)

BIOL 4114 Global Change Ecology (3) Pre: (BIOL 2704 or BIOL 2704H), BIOL 2804

FIW 4624 Marine Ecology (3)

VI. FREE ELECTIVES

Complete remaining credit hours needed to satisfy degree 120 credit hour requirement _____() _____()

NOTES:

† Semester of course offering only noted for GEOS courses. Semester offered is subject to change. Please consult the timetable or your advisor for current information.

Prerequisites

See University Course Catalog for prerequisites

Except when noted with a #, 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, 1104, 1014 for GEOS 2024

GEOS 2104, 1014 for GEOS 2024

GEOS 4974 for GEOS 4994

CHEM 1055 or CHEM 1055H for CHEM 1035

CHEM 1065 for CHEM 1045

COMM 1015 for ENGL 1105 and COMM 1016 for ENGL 1106

CS 1344 for CS 1044

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 45 hours attempted at Virginia Tech, students must have completed the following courses:

GEOS 2004, 2024 (or 1004, 1104, 1014 or 2104, 1014), 2444, 3504

MATH 1025 or 1225

CHEM 1035, 1045

2. By 60 hours attempted at Virginia Tech, students must have completed the following courses:

PHYS 2205, 2215 or 2305

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.