

College of Science  
Department of Geosciences  
Bachelor of Science in Geosciences (BS)  
**Environmental and Engineering Geosciences (EEG) Option**  
For students graduating in calendar year 2022  
and for student date of entry under UG Catalog 2020-2021

**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)

ENGL 1105 (3)

ENGL 1106 (3)

(Advanced: 3 credits)

Completed by major/option requirements

**Concept 2: Critical Thinking in the Humanities (6 credits)**

(Select from approved Pathways courses)

\_\_\_\_\_ (3)

\_\_\_\_\_ (3)

**Concept 3: Reasoning in the Social Sciences (6 credits)**

(Select from approved Pathways courses)

\_\_\_\_\_ (3)

\_\_\_\_\_ (3)

**Concept 4: Reasoning in the Natural Sciences (6 credits)**

Completed by major/option requirements

**Concept 5: Quantitative and Computational Thinking (9 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)**

(Select from approved Pathways courses)

\_\_\_\_\_ (3 Arts)

\_\_\_\_\_ (3 Design)

**Concept 7: Critical Analysis of Identity & Equity in the US (3 credits)**

(Select from approved Pathways courses, can double count with another concept)

\_\_\_\_\_ (3)

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

**II. GEOS Degree Core (19 credits)**

GEOS 2024 Earth's Dynamic Systems	_____ (8)	F
GEOS 2444 Geoscience Field Observations. Pre: (1004, 1104) or 2024 or 2104	_____ (2)	S
GEOS 3204 Sedimentology Stratigraphy. Pre: (1004 or 2024 or 2104)	_____ (3)	F
GEOS 3404 Elements of Structural Geology. Pre: (1004 or 2024 or 2104)	_____ (3)	F
GEOS 3504 Mineralogy. Pre: CHEM 1035	_____ (3)	F

**III. GEOS Major Requirements (19 credits)\***

		Sem†	Meets Pathways:
GEOS 2004 Geoscience Fundamentals	_____ (3)	S	
GEOS 4024* Senior Seminar. Pre: (2004, 2024, 2444, 3204, 3404, 3504)	_____ (3)	S	1 advanced
GEOG 2084 Principles of Geographic Infographic 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. Pre: (MATH 1025 or MATH 1225)	_____ (3)		5 advanced
<b>OR</b> STAT 3615* Biological Statistics. Pre: (MATH 1205 or MATH 1525 or MATH 1225 or MATH 1025 or MATH 1524 or ISC 1105)			

**Choose 1 course from:**

GEOS 3024 Computational Methods in Geosciences Pre: (1004 or 2024 or 2104), (MATH 1225 or MATH 1025)	_____ (3)
CS 1044 Intro to Programming in C	_____ (3)
CS 1064 Intro to Programming in Python	

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

**IV. EEG Option Requirements (35 credits)\***

		Sem†	Meets Pathways:
MATH 1225* Calculus of a Single Variable	_____ (4)		5 foundation
MATH 1226* Calculus of a Single Variable	_____ (4)		5 foundation
PHYS 2305* Foundations of Physics. Pre: (MATH 1205 or MATH 1205H or MATH 1225) or (MATH 1206 or MATH 1206H or MATH 1226)	_____ (4)		4
PHYS 2306* Foundations of Physics. Pre: (MATH 1206 or MATH 1206H or MATH 1226), PHYS 2305	_____ (4)		4
CHEM 1036* General Chemistry. Pre: (1035 or 1055 or 1055H)	_____ (3)		4
CHEM 1046* General Chemistry Laboratory. Co: 1036	_____ (1)		4
GEOS 3014 Environmental Geosciences (3) Pre: 1004 or 1024 or 2024 or 2104	_____ (3)	S	
GEOS 3104 Elementary Geophysics. Pre: (1004 or 2024 or 2104), (MATH 1026 or MATH 1226), (PHYS 2205 or PHYS 2305)	_____ (3)	S	
GEOS 3304 (CSES 3304) (GEOG 3304) Geomorphology (3) Pre: (GEOG 1104 or GEOS 1004 or GEOS 2104 or GEOS 2024)	_____ (3)	S	
GEOS 4804 Groundwater Hydrology (3) Pre: (MATH 1226 or 2024), (PHYS 2205 or 2305)	_____ (3)	F, S	
GEOS 4824 Engineering Geology (3) Pre: (1004 or 2024 or 2104), (PHYS 2305 or PHYS 2205), (CHEM 1035 or CHEM 1015), (MATH 1225 or MATH 1025)	_____ (3)	S	

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

**V. EEG Option Electives (choose 12 credits minimum from list below)**

		Sem†
GEOS 3614 (CSES 3314)(ENSC 3114) Soils (3) Pre: CHEM 1036		F
GEOS 3624 (CSES 3124)(ENSC3124) Soils Laboratory (1) Co: 3614		F
GEOS 3704 Igneous & Metamorphic Rocks (3) Pre: 2024 or (1004, 1104)		S
GEOS 4164 Potential Field Methods in Exploration Geophysics (4; odd yrs). Pre: 3104, (MATH 2204 or MATH 2204H), MATH 2214, PHYS 2306		F
GEOS 4174 Exploration Seismology (4; even yrs). Pre: 3104, (MATH 2204 or MATH 2204H), MATH 2214, PHYS 2305		F
GEOS 4354 Introduction to Remote Sensing (3)		S
GEOS 4624 Mineral Deposits (3) Pre: 1004 or 2104 or 2024		S
GEOS 4634 Environmental Geochemistry (3) Pre: MATH 1225, CHEM 1035		F
GEOS 4964 Field Study (1-6)		
GEOS 4994 Undergraduate Research (max 3 credits)		
GEOS 4974 Independent Study (max 3 credits)		
ENSC 3614 (CSES 3614) Soil Physical and Hydrological Properties (3) Pre: (CSES 3114, CSES 3124) or (GEOS 3614, GEOS 3624)		
ENSC 3634 (CSES 3634) Physics of Pollution** (3) Pre: (CSES 3114, PHYS 2206), (MATH 2016 or MATH 2024)		
FREC 3104 (WATR 3104) Principles of Watershed Hydrology (3) Pre: Jr Standing. (MATH 1206 or MATH 1226 or MATH 2015 or MATH 1026)		

**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

\*\*Additional prerequisite not required for major/option is needed for this course.

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

CHEM 1055 or CHEM 1055H for CHEM 1035 and CHEM 1056 or CHEM 1056H for CHEM 1036

CHEM 1065 for CHEM 1045 and CHEM 1066 for CHEM 1046

ENGL 1204H for ENGL 1106

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 60 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 1225

CHEM 1035, 1045

PHYS 2305

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)

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.