APPROVED
University Registrar

College of Science
Department of Geosciences
Bachelor of Science in Geosciences (BS)
Geochemistry Option
For students graduating in calendar year 2021

CURRICULUM FOR LIBERAL EDUCATION (CLE) REQUIREMENTS

(CLE) requirements and approved courses are available online:
http://www.cle.prov.vt.edu/guides/index.html (credit hours in parentheses)

Writing and Discourse (Area 1: 6 credits)
(ENGL 1105-1106 Freshman English) (3)____ (3)____

Ideas, Cultural Traditions, and Values (Area 2: 6 credits required) (3)____ (3)____
(Select from approved CLE courses)

Society and Human Behavior (Area 3: 6 credits required) (3)_____ (3)____
(Select from approved CLE courses)

Scientific Reasoning and Discovery (Area 4)
(Area fulfilled by CHEM 1035 and CHEM 1036)

Quantitative and Symbolic Reasoning (Area 5)
(Area fulfilled by MATH 1225 and MATH 1226)

Creativity and Aesthetic Experience (Area 6: 3 credits required) (3)____
(Select from approved CLE courses; must be a three-credit course)

Critical Issues in a Global Context (Area 7: 3 credits required)
(Area fulfilled by GEOS 1024)

CLE credit hour requirement: **21 credits**

COLLEGE AND DEPARTMENT REQUIREMENTS

* indicates course with prerequisite(s) or corequisite(s) – please see chart on last page

Geoscience Courses (45 credits)

GEOS 1024	Resources Geology & the Environment	(3)____	
GEOS 1124	Resources Geology & the Environment Lab	(1)____	
GEOS 2004*	Geoscience Fundamentals[2]	(3)____	
GEOS 2024	Earth's Dynamic Systems[1]	(8)____	
GEOS 2444*	Geoscience Field Observation[2]	(2)____	
GEOS 3104*	Elementary Geophysics[2]	(3)____	
GEOS 3204*	Sedimentology Stratigraphy[1]	(3)____	
GEOS 3404*	Elements of Structural Geology[1]	(3)____	
GEOS 3504*	Mineralogy[1]	(3)____	
GEOS 3604*	Paleontology[2]	(3)____	
GEOS 3704*	Igneous & Metamorphic Rocks[2]	(3)____	
GEOS 4024*	Senior Seminar[2]	(3)____	
GEOS 4634*	Environmental Geochemistry[1]	(3)____	
GEOS 4974	Independent Study[3]	(4)____	

Mathematics Courses (19-20 credits)

MATH 1114 or	Elementary Linear Algebra	(2)____	
MATH 2114*	Introduction to Linear Algebra	(3)____	
MATH 1225 – 1226*	Calculus of a Single Variable	(4)____	(4)____
MATH 2204*	Introduction Multivariable Calculus	(3)____	
MATH 2214*	Introduction to Differential Equations	(3)____	
STAT 3005*	Statistical Methods	(3)____	

Natural Science Courses (33 credits)

CHEM 1035 – 1036*	General Chemistry	(3)____	(3)____
CHEM 1045* - 1046*	General Chemistry Lab	(1)____	(1)____
CHEM*	Elective[4]	(3)____	(3)____
		(3)____	(1)____
PHYS 2305* – 2306*	Foundations of Physics I and Lab	(4)____	(4)____
Science*	Elective[5]	(3)____	(3)____
		(1)____	

Free Electives (1-2 credits) _____

College and department credit hour requirement: **99 credits**

Total to complete degree **120 credits**

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[1]Taught only during fall semester
[2]Taught only during spring semester
[3]Registration requires an overall GPA of 2.5 or above
[4]Select from CHEM 2114, 2124, 2514, 2535, 2536, 2545, 2546, 3124, 3615, 3625, 4615, or 4616
[5]Choose from any 3-4000 level course from Biochemistry, Biological Sciences, Chemical Engineering, Chemistry, Civil Engineering, Computer Science, Crop and Soil Environmental Sciences, Engineering Science and Mechanics, Geosciences, Materials Science and Engineering, Mathematics, Mining and Minerals Engineering, Physics, or Statistics.

Credit hours and GPA 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 geosciences courses.

Prerequisites: This checksheet has no hidden prerequisites, although some of the courses listed are prerequisites for other courses. Please consult the Undergraduate Course Catalog for more information.

Substitutions:

CHEM 1055 or CHEM 1055H for CHEM 1035 and CHEM 1056 or CHEM 1056H for CHEM 1036
CHEM 1065/1066 for CHEM 1045/1046

ENGL 1204H Honors Freshman English for ENGL 1106 Freshman English
COMM 1015/1016 Communication Skills for ENGL 1105/1106 Freshman English

MATH 2114H Honors Introduction to Linear Algebra for MATH 2114 Introduction to Linear Algebra
MATH 2214H Honors Introduction to Differential Equations for MATH 2214 Differential Equations

STAT 3615 Biological Statistics for STAT 3005 Statistical Methods

Satisfactory progress towards degree:

1. By 72 hours students must have completed the following courses and their prerequisites:
   GEOS 2004, 2024, 3404, 3504, 3704
   MATH 1114 or 2114, 1225, 1226, 2204, 2214
   CHEM 1035, 1036, 1045, 1046, electives
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", advance placement, or IB credit).
3. All GEOS courses will be used to calculate in-major GPA.

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.

Course requirements are subject to change. Always check the Undergraduate Catalog for the most current prerequisite and corequisite information.

Geochemistry Option			
Courses		**Prerequisites**	**Corequisites**
GEOS 1024	Resources Geology & the Environment	None	None
GEOS 1124	Resources Geology & the Environment Lab	None	None
GEOS 2004	Geosciences Fundamentals	GEOS 2024	None
GEOS 2024	Earth's Dynamic Systems	None	None
GEOS 2444	Geoscience Field Observations	GEOS 2024	None
GEOS 3104	Elementary Geophysics	Math 1205 or 1225, 1206 or 1226, GEOS 2004, 2024, 2444, Phys 2305	Phys 2306
GEOS 3204	Sedimentology Stratigraphy	GEOS 2004, 2024, 2444	None
GEOS 3404	Elements of Structural Geology	GEOS 2004, 2024, 2444	None
GEOS 3504	Mineralogy	Math 1205 or 1225, Chem 1036, GEOS 2004, 2024, 2444	None
GEOS 3604	Paleontology	GEOS 2004, 2024, 2444	None
GEOS 3704	Igneous & Metamorphic Rocks	GEOS 2004, 2024, 2444, 3504	None
GEOS 4024	Senior Seminar	GEOS 3104, 3204, 3404, 3504, 3604, 3704	None
GEOS 4634	Environmental Geochemistry	Math 1205 or 1225, Chem 1036	None
GEOS 4974	Independent Study	None	None
MATH 1114	Elementary Linear Algebra	None	None
MATH 2114	Introduction to Linear Algebra	Math 1225 or 1226	None
MATH 1225	Calculus of a Single Variable	None	None
MATH 1226	Calculus of a Single Variable	Math 1225	None
MATH 2204	Introduction Multivariable Calculus	Math 1226	None
MATH 2214	Introduction to Differential Equations	Math 1114 or 1114H or 2114 or 2114H, 1206 or 1226	None
STAT 3005	Statistical Methods	Math 1206 or 1225	None
CHEM 1035	General Chemistry	None	None
CHEM 1036	General Chemistry	Chem 1035 or 1055 or 1055H	None
CHEM 1045	General Chemistry Lab	None	Chem 1035
CHEM 1046	General Chemistry Lab	Chem 1045 or 1065	Chem 1036
CHEM	Specific Electives	Varies	Varies
PHYS 2305	Foundations of Physics I and Lab	Math 1205 or 1205H or 1225 or 1206 or 1206H or 1226	None
PHYS 2306	Foundations of Physics I and Lab	Math 1206 or 1206H or 1226, Phys 2305	None
Science	Free Electives	Varies	Varies