## COMPUTATIONAL MODELING AND DATA ANALYTICS MAJOR WITH GEOSCIENCES OPTION

## Program Curriculum



## Subtotal

## Free Electives

12-15Pathways to General Education
Pathways Concept 1 - Discourse
Select six credits in Pathway $1 f$ (https://catalog.vt.edu/course- ..... 6
search/?attrs_pathways=attrs_pathways_G01F)
Select three credits in Pathway 1a (https://catalog.vt.edu/course-3
search/?attrs_pathways=attrs_pathways_G01A)
Pathways Concept 2 - Critical Thinking in the Humanities
Select six credits in Pathway 2 (https://catalog.vt.edu/course- ..... 6
search/?attrs_pathways=attrs_pathways_G02)
Pathways Concept 3 - Reasoning in the Social Sciences
Select six credits in Pathway 3 (https://catalog.vt.edu/course- ..... 6
search/?attrs_pathways=attrs_pathways_G03)
Pathways Concept 4-Reasoning in the Natural Sciences
GEOS 1004 Earth Science: Our Past, Present, and Future ..... 3
GEOS 1014 Evolution of the Earth-Life System ..... 3
Pathways Concept 5 - Quantitative and Computational Thinking
MATH 1225 Calculus of a Single Variable (5F) ..... 4
MATH 1226 Calculus of a Single Variable (5F) ..... 4
CMDA 4864 Computational Modeling and Data Analytics ..... 3
Pathways Concept 6 - Critique and Practice in Design and the Arts
Select three credits in Pathway 6a (https://catalog.vt.edu/course- ..... 3
search/?attrs_pathways=attrs_pathways_G06A)
Select three credits in Pathway 6d (https://catalog.vt.edu/course- ..... 3
search/?attrs_pathways=attrs_pathways_G06D)Pathways Concept 7 - Critical Analysis of Identity and Equity in theUnited States
Select three credits in Pathway 7 (https://catalog.vt.edu/course- ..... 3
search/?attrs_pathways=attrs_pathways_G07)47
Total Credits117-123
${ }^{1}$ Course will be used for computing the "in major" GPA.
${ }^{2}$ MATH 2204 Introduction to Multivariable Calculus, MATH 2214 Introduction to Differential Equations, STAT 3005 Statistical Methods, STAT 3006 Statistical Methods, \& STAT 3104 Probability and Distributions will substitute for CMDA 2005 Integrated Quantitative Sciences and CMDA 2006 Integrated Quantitative Sciences.
${ }^{3}$ CS 1114 Introduction to Software Design will substitute for CS 1064 Introduction to Programming in Python and CS 2064 Intermediate Programming in Python.
${ }^{4}$ GEOS 3204 Sedimentology-Stratigraphy or GEOS 3404 Elements of Structural Geology can be counted if not used to satisfy option requirements.

## Graduation Requirements

120 credit hours are required for graduation. These credits must include the courses required for the major (see above sections). To graduate, a student must have at least a 2.0 in-major GPA and overall GPA. If 120 credit hours are reached and a student does not meet the GPA requirement, the student must take additional in-major courses to raise the in-major GPA to a 2.0.

## Prerequisites

Some courses have prerequisites. Students are required to double check course prerequisites and equivalents. Please see your advisor or consult the Undergraduate Course Catalog for more information.

## Progress Toward Degree

Three conditions are required for continuation in the major.

1. Upon having attempted 72 total credit hours (including transfer, AP , advanced standing, credit by examination, course withdrawal) majors must have completed the following courses with grades of C - or better in a maximum of two attempts (including attempts that were withdrawn): Upon having attempted 72 total credit hours (including transfer, AP, advanced standing, credit by examination, course withdrawal) majors must have completed the following courses with grades of $\mathbf{C}$ - or better in a maximum of two attempts (including attempts that were withdrawn): MATH 1225 Calculus of a Single Variable; MATH 1226 Calculus of a Single Variable; MATH 2114 Introduction to Linear Algebra; (CMDA 2005 Integrated Quantitative Sciences and CMDA 2006 Integrated Quantitative Sciences) or (STAT 3005 Statistical Methods, STAT 3006 Statistical Methods, STAT 3104 Probability and Distributions; MATH 2204 Introduction to Multivariable Calculus, MATH 2214 Introduction to Differential Equations).
2. Upon having attempted 72 total credit hours (including transfer, AP, advanced standing, credit by examination, course withdrawal) majors must have completed the following courses with grades of C or better in a maximum of two attempts (including attempts that were withdrawn): (CS 1064 Introduction to Programming in Python and CS 2064 Intermediate Programming in Python) or CS 1114 Introduction to Software Design; CS 2114 Software Design and Data Structures.
3. Upon having attempted 12 credits of courses designated as counting for the in-major GPA, students must maintain an in-major GPA of 2.0 or better.

## 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 credit 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.

