GEOL100  Physical Geology
or GEOL120  Environmental Geology
GEOL110  Physical Geology Laboratory
GEOL102  Historical Geology
GEOL322  Mineralogy
GEOL341  Structural Geology
GEOL342  Sedimentation and Stratigraphy
GEOL423  Optical Mineralogy
GEOL443  Petrology
GEOL393  Geology Senior Thesis I: Proposal
GEOL394  Geology Senior Thesis II: Research
GEOL490  Geology Field Camp
GEOL351  Statistics for Geoscientists
GEOL447  Observational Geophysics
GEOL489  Special Topics (GEOL489G-Geosciences Modeling)
GEOL340  Geomorphology
GEOL451  Groundwater
GEOL412  Geology of the Terrestrial Planets
GEOL446  Geophysics
GEOL455  Marine Geophysics
GEOL457  Seismology
GEOL444  Low Temperature Geochemistry
GEOL445  High Temperature Geochemistry
GEOL463  Economic Geology
GEOL331  Principles of Paleontology
GEOL435  Environmental Geochemistry
GEOL436  Principles of Biogeochemistry
GEOL437  Global Climate Change: Past and Present
GEOL313  Chemistry I - Fundamentals of General Chemistry
CHEM132  General Chemistry I Laboratory
or CHEM136 General Chemistry Laboratory for Engineers
Courses.

in required geology courses, and a C- average or better in supporting
receive a degree in Geology, students must earn a grade of C- or better
for an atmospheric and oceanic science and an astronomy course. To
and adds eight credits of education courses along with requirements
Track, reduces by three the number of upper-level geology requirements,
Compared to the Geology Professional Track, the Secondary Education
consult with advisors in the College of Education.
professional opportunities in secondary education are urged, also, to
geology are advised to choose the Professional Track. Students seeking
although students primarily intending to attend graduate school in
government, or industry, or for graduate study, although students primarily intending to attend graduate school in
ground are advised to choose the Professional Track. Students seeking
geology are advised to choose the Professional Track. Students seeking
professions in secondary education are urged, also, to consult with advisors in the College of Education.

Compared to the Geology Professional Track, the Secondary Education
Track, reduces by three the number of upper-level geology requirements,
and adds eight credits of education courses along with requirements
for an atmospheric and oceanic science and an astronomy course. To
receive a degree in Geology, students must earn a grade of C- or better
in required geology courses, and a C- average or better in supporting
courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL446</td>
<td>Geophysics</td>
<td></td>
</tr>
<tr>
<td>GEOL451</td>
<td>Groundwater</td>
<td></td>
</tr>
</tbody>
</table>

Supporting Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ASTR100</td>
<td>Introduction to Astronomy</td>
<td>3-4</td>
</tr>
<tr>
<td>ASTR101</td>
<td>General Astronomy</td>
<td></td>
</tr>
<tr>
<td>AOSC123</td>
<td>Causes and Consequences of Global Change</td>
<td>3</td>
</tr>
<tr>
<td>AOSC200</td>
<td>Weather and Climate</td>
<td></td>
</tr>
<tr>
<td>CHEM131</td>
<td>Chemistry I - Fundamentals of General Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM132</td>
<td>General Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM133</td>
<td>General Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>MATH140</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH141</td>
<td>Calculus II</td>
<td>4</td>
</tr>
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</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS161</td>
<td>General Physics: Mechanics and Particle Dynamics and Physics Laboratory Introduction</td>
<td>4</td>
</tr>
<tr>
<td>PHYS171</td>
<td>Introductory Physics: Mechanics and Relativity and Physics Laboratory Introduction</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 70-74

1 Or appropriate substitution with the approval of the department

Matriculated Geology majors are expected to take all courses on campus unless specific departmental permission is given.

Secondary Education Track

The Geology Secondary Education Track leads to a B. S. degree in Geology with special emphasis on course work that prepares the student for teaching at the secondary school level in a manner consistent with the UTeach Initiative and Common Core standards. Further coursework in Education (including student teaching) will be required in order to obtain Maryland State Teaching Certification. This track also prepares students for work as a geologists in government or industry, or for graduate study, although students primarily intending to attend graduate school in

geology are advised to choose the Professional Track. Students seeking
professions in secondary education are urged, also, to consult with advisors in the College of Education.

Compared to the Geology Professional Track, the Secondary Education
Track, reduces by three the number of upper-level geology requirements,
and adds eight credits of education courses along with requirements
for an atmospheric and oceanic science and an astronomy course. To
receive a degree in Geology, students must earn a grade of C- or better
in required geology courses, and a C- average or better in supporting
courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>GEOL100</td>
<td>Physical Geology</td>
<td>3</td>
</tr>
<tr>
<td>or GEOL120</td>
<td>Environmental Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL102</td>
<td>Historical Geology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL322</td>
<td>Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>GEOL341</td>
<td>Structural Geology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL342</td>
<td>Sedimentation and Stratigraphy</td>
<td>4</td>
</tr>
<tr>
<td>GEOL393</td>
<td>Geology Senior Thesis I: Proposal</td>
<td>3</td>
</tr>
<tr>
<td>GEOL394</td>
<td>Geology Senior Thesis II: Research</td>
<td>3</td>
</tr>
<tr>
<td>GEOL423</td>
<td>Optical Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>GEOL443</td>
<td>Petrology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL490</td>
<td>Geology Field Camp</td>
<td>6</td>
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</table>

Select two of the following: 6-8

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEOL212</td>
<td>Planetary Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL331</td>
<td>Principles of Paleontology</td>
<td></td>
</tr>
<tr>
<td>GEOL340</td>
<td>Geomorphology</td>
<td></td>
</tr>
<tr>
<td>GEOL/</td>
<td>AOSC375</td>
<td></td>
</tr>
<tr>
<td>AOSC375</td>
<td>Introduction to the Blue Ocean</td>
<td></td>
</tr>
<tr>
<td>GEOL444</td>
<td>Low Temperature Geochemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL445</td>
<td>High Temperature Geochemistry</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 76-79

Geophysics Track

The geophysics curriculum is designed to meet the requirements of industry, graduate school, and government. The B.S. degree requires students to complete introductory geology and physics requirements (39 credits) and upper-level requirements including depth options, context options, and breadth options (30 - 35 credits) in addition to the General Education Program requirements and the completion of at least 120 credits in total. In order to receive a degree in Geophysics, the department requires that students must have a grade of C- or better in the required geology courses.

Courses required for the B.S. in Geology are listed below. Some courses require field trips for which the students are expected to pay for room (if required) and board.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL100</td>
<td>Physical Geology</td>
<td>3</td>
</tr>
<tr>
<td>or GEOL120</td>
<td>Environmental Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL110</td>
<td>Physical Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MATH140</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH141</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH241</td>
<td>Calculus III</td>
<td>4</td>
</tr>
</tbody>
</table>
PHYS161  General Physics: Mechanics and Particle Dynamics  3
or PHYS171  Introductory Physics: Mechanics and Relativity

PHYS165  Introduction to Programming in the Physical Sciences  3

PHYS174  Physics Laboratory Introduction  1
PHYS272  Introductory Physics: Fields  3
PHYS273  Introductory Physics: Waves  3
PHYS275  Experimental Physics I: Mechanics and Heat  2
PHYS276  Experimental Physics II: Electricity and Magnetism  2

Select one of the following:  6

PHYS274  Mathematical Methods for Physics I & GEOL351
MATH240  Introduction to Linear Algebra & MATH246

Geophysics Upper Level Requirements

GEOL393  Geology Senior Thesis I: Proposal  3
GEOL394  Geology Senior Thesis II: Research  3
GEOL446  Geophysics  3

Depth Requirements
Select three of the following:  9

GEOL412  Geology of the Terrestrial Planets
GEOL447  Observational Geophysics
GEOL455  Marine Geophysics
GEOL456  Engineering Geology
GEOL457  Seismology
GEOL460  Field Geophysics

Context Requirement
Select two of the following:  6-8

AOSC400  Physical Meteorology of the Atmosphere
AOSC424  Remote Sensing of the Atmosphere and Ocean
AOSC431  Atmospheric Thermodynamics
AOSC432  Dynamics of the Atmosphere and Ocean
GEOL322  Mineralogy
GEOL340  Geomorphology
GEOL341  Structural Geology
GEOL342  Sedimentation and Stratigraphy
GEOL423  Optical Mineralogy
GEOL443  Petrology
GEOL451  Groundwater
GEOL463  Economic Geology
GEOL472

Breadth Requirement
Select two of the following:  6-8

PHYS371  Modern Physics
PHYS373  Mathematical Methods for Physics II
PHYS401  Quantum Physics I
PHYS402  Quantum Physics II
PHYS410  Classical Mechanics
PHYS411  Intermediate Electricity and Magnetism

Recommended Courses
Select one of the following:

CHEM131  Chemistry I - Fundamentals of General Chemistry & CHEM132 and General Chemistry I Laboratory
CHEM135  General Chemistry for Engineers & CHEM136 and General Chemistry Laboratory for Engineers

Total Credits  69-73

Matriculated Geology majors are expected to take all courses on campus unless specific departmental permission is given.

FOUR YEAR PLAN

Click here (https://cmns.umd.edu/undergraduate/advising-academic-planning/academic-planning/four-year-plans/four-year-plans-gened/) for roadmaps for four-year plans in the College of Computer, Mathematical, and Natural Sciences.

Additional information on developing a four-year academic plan can be found on the following pages:

- 4yearplans.umd.edu (http://4yearplans.umd.edu/)
- the Student Academic Success-Degree Completion Policy (https://academiccatalog.umd.edu/undergraduate/registration-academic-requirements-regulations/academic-advising/) section of this catalog