# Earth Sciences

## Freshman Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1371 Calculus I (placement into course or pre-req)</td>
<td>Math 1372 Calculus II (1371)</td>
</tr>
<tr>
<td>Phys 1301W Intro Physics I (&amp;Math 1371)</td>
<td>Phys 1302W Intro Physics II (1301, &amp;Math 1372)</td>
</tr>
<tr>
<td>Chem 1061 Chem Princ I (placement into course or 1015, &amp;1065)</td>
<td>Chem 1062 Chem Princ II (1061/65, &amp;1066)</td>
</tr>
<tr>
<td>CSE 1001 1st Yr Experience</td>
<td>Liberal Education course or Writ 1301 (ESci 1007 recommended)</td>
</tr>
</tbody>
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Liberal Education course or Writ 1301 (ESci 1007 recommended)

## Sophomore Year

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<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>Math 2373 or 2374 (1372)</td>
<td>ESci 2202 Earth History (2201, 2301)</td>
</tr>
<tr>
<td>ESci 2201 Solid Earth Dyn (&amp;Phys 1301)</td>
<td>ESci 2203 Earth Surface Dyn</td>
</tr>
<tr>
<td>ESci 2301 Minerology (&amp;Chem 1061/65, &amp;Math 1371)</td>
<td>ESci 3891 Field Methods</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Focus Area course</td>
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## Junior Year

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<th>Spring Semester</th>
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<tbody>
<tr>
<td>ESci 3303W Geochem Princ (Chem 1061/65)</td>
<td>Focus Area course</td>
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<tr>
<td>ESci 3202 Fluid Earth Dynamics (&amp;2201)</td>
<td>Focus Area course</td>
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<tr>
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<tr>
<td>Liberal Education course</td>
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Liberal Education course or Writ 1301 (ESci 1012 recommended)

Summer after sophomore year: ESci 3911 Intro Field Geology

## Senior Year

<table>
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<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>Focus Area course</td>
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</tr>
<tr>
<td>Focus Area course</td>
<td>Add’l Cognate Science (Technical Elective)</td>
</tr>
<tr>
<td>Add’l Cognate Science (Technical Elective)</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
<tr>
<td>Open Elective (If needed to reach 120 credits)</td>
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</tbody>
</table>

## About This Plan

- This plan is not a contract. Curriculum can change. The APAS is the official method for tracking completion of University degree requirements.
- Shaded courses are only offered in the indicated semester.
- Course pre-requisites and co-requisites (designated by &) are listed below the course number and title.
- Students can take either the CSE-only or University-wide versions of the math courses (Math 1371/1271, 1372/1272, 2373/2243, 2374/2263).

## Applying to your Major

Students who have completed the required courses for admission to this major (indicated with double boxes on plan) and have a 3.2 UM-TC technical GPA at the end of the fall semester will be guaranteed admission. All other students who have completed the required courses will be considered for admission on a space-available basis. Admission following the spring semester is only based on space availability. The major application database is available at z.umn.edu/csemajorapp.

## Total Credits Needed for Degree: 120
Earth Science

POSSIBLE POSITIONS

- **Economic geologist:** Explores and develops metallic and nonmetallic resources. Economic geologists study mineral deposits and find environmentally safe ways to dispose of waste materials from mining activities.

- **Environmental geologist:** Studies the interaction between the geosphere, hydrosphere, atmosphere, biosphere, and human activities. Environmental geologists work to solve problems associated with pollution, waste management, urbanization, and natural hazards, such as flooding and erosion.

- **Field geologist:** Investigates the structure and evolution of the earth and its natural resources to survey land and draw up safe building plans.

- **Mineralogist:** Studies mineral formation, composition, and properties.

- **Paleontologist:** Studies fossils to learn about life in prehistoric times.

- **Petroleum scientist:** Searches for and develops oil and natural gas resources.

- **Petrologist:** Takes observational, chemical, and physical data and uses it to develop theories on the origin of rocks.

- **Seismologist:** Studies earthquakes, including how they form and their patterns. Seismologists interpret the structure of the earth through the study of earthquakes, and predict when earthquakes will occur.

- **Soil scientist:** Studies soil and deals with agricultural issues and solutions.

- **Volcanologist:** Studies and researches volcanoes, including predicting when the next eruptions will occur.

*Some of these positions may require an advanced degree.

CSE Career Outcomes

**Average Starting Salary:** $ **

**Post-graduation Outcomes:**

- **Grad School:** 30%
- **Employed:** 70%

**cohort size too small to report data due to privacy regulations

INDUSTRIES

- Civil engineering
- Economic geology
- Environmental
- Government agencies
- Mineral energy
- Mining
- Oil/petroleum
- Paleontology
- Physiography
- Structural/subsurface geology
- Text and map publishers

EMPLOYERS

- Antea Group
- Applied Engineering, Inc.
- Barr Engineering
- Bay West LLC
- Braun Intertec Corp.
- ExxonMobil
- MN Dept. of Natural Resources
- MN Pollution Control Agency
- National Park Service
- Summit EnviroSolutions
- Washington Conservation Distr.
- WSP Global

More Information

Career Center: cse.umn.edu/career
Salary Information: z.umn.edu/csesalary
More Information on Undergraduate Majors: cse.umn.edu/majors

Please visit the Career Center to continue exploring this major.

*Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey. Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.*