EARTH SYSTEMS SCIENCE, MS (AOES)

Banner Code: SC-MS-ESSC

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Website: cos.gmu.edu/aoes/academics/earth-science-graduate-program/

This is a shared program between the Department of Atmospheric, Oceanic, and Earth Sciences and the Department of Geography and Geoinformation Science.

The program addresses the growing demand for trained professionals in the Earth sciences. The degree emphasizes a research-oriented, global systems approach to studying the Earth and its systems- the atmosphere, the hydrosphere, and the lithosphere, including their interrelationships and interactions with the biosphere. Emphasis is on the observation, measurement, and analysis of Earth's systems.

Most student research projects and theses will relate to geologic and geographic topics, however studies of related topics in Earth science are welcome. Students completing the program are qualified to pursue careers that require knowledge of the basics of Earth systems science and the requisite tools, specifically pertaining to the area of Earth science that they choose to investigate. Students are encouraged to undertake a master's thesis but may choose a research project. In the latter case, students must pass a comprehensive exam.

Admissions & Policies

Admissions
University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now).

Eligibility
Applicants should have earned a BS degree in atmospheric, Earth, environmental, geological, geographical, ocean, or physical science. Previous coursework should include two semesters each of calculus, chemistry, and physics, and one semester of statistics. Applicants should have a minimum GPA of 3.00 in their undergraduate degree.

Application Requirements
Official transcripts from each college and graduate institution attended, a current résumé, and a goals statement are required. Applicants also need three letters of recommendation and an official report of scores obtained on the GRE-GEN. The GRE requirement for admission may be waived if the student holds a master's degree from a regionally accredited U.S. institution. TOEFL scores are required of all international applicants.

Policies
For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements
Total credits: 30
Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates must complete 10 credits of GGS courses and 10 credits of GEOL/CLIM courses toward their requirements. (*Culminating Experience* credits do not count towards this requirement).

Earth Science Core

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select one course from each of the following groups:</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td><strong>Atmosphere:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLIM 710</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLIM 714</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEOL 532</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GGS 670</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PHYS 575</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Hydrosphere:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLIM 512</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLIM 712</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEOL 513</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GGS 656</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Lithosphere:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEOL 506</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GGS 657</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or GEOL 601</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td>9</td>
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Techniques 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Select two courses from the following:</td>
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</tr>
<tr>
<td></td>
<td>GGS 553</td>
<td></td>
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<tr>
<td></td>
<td>GGS 560</td>
<td></td>
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<tr>
<td></td>
<td>GGS 579</td>
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</tr>
<tr>
<td></td>
<td>GGS 680</td>
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<tr>
<td></td>
<td>GGS 754</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

* Other courses can be substituted with advisor approval.

Colloquium

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GGS 900</td>
<td>1</td>
</tr>
</tbody>
</table>
Select one from the following:  
GEOL 536  Paleontology Seminar  
GEOL 792  Seminar in Earth Systems Science, Geology, Earth Science  
CLIM 991  Climate Dynamics Seminar  
Total Credits 2

**Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 10 credits from courses at the 500 to 900-level (excluding 700, 798, and 799 courses)</td>
<td>10</td>
</tr>
</tbody>
</table>

- CLIM Courses
- GEOL Courses
- GGS Courses
- EVPP Courses

Total Credits 10

**Culminating Experience**

Choose the culminating experience of either a thesis or a project (either must total 3 credits):

**Thesis**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 3 credits from the following:</td>
<td>3</td>
</tr>
<tr>
<td>GGS 799</td>
<td>Thesis</td>
<td></td>
</tr>
<tr>
<td>GEOL 799</td>
<td>Master’s Thesis in Earth Systems Science</td>
<td></td>
</tr>
<tr>
<td>CLIM 799</td>
<td>Master’s Thesis in Climate</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 3

**Project**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Select one from the following:</td>
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<tr>
<td>GGS 700</td>
<td>Comprehensive Exam</td>
<td></td>
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<tr>
<td>GEOL 700</td>
<td>Comprehensive Exam</td>
<td></td>
</tr>
<tr>
<td>CLIM 700</td>
<td>Climate Comprehensive Exam</td>
<td></td>
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</table>

Select one from the following:  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGS 798</td>
<td>Research Project in Earth Systems Science</td>
<td></td>
</tr>
<tr>
<td>GEOL 798</td>
<td>Master’s Research Project in Earth Systems Science</td>
<td></td>
</tr>
<tr>
<td>CLIM 798</td>
<td>Master’s Climate Research Project</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 3