

EARTH SYSTEMS SCIENCE, MS (GGS)

Banner Code: SC-MS-ESSC

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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 the Graduate Admissions Policies section of this catalog.

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 towards their requirements. ("Culminating Experience" credits do not count towards this requirement).

Earth Science Core

Code	Title	Credits
Select one course from each of the following groups:		9
Atmosphere:		
CLIM 710	Introduction to Physical Climate System	
CLIM 714	Land-Climate Interactions	
GEOL 532	Paleoclimatology	
GGS 670	Introduction to Atmosphere and Weather	
PHYS 575	Atmospheric Physics I	
Hydrosphere:		
CLIM 512	Physical Oceanography	
CLIM 712	Physical and Dynamical Oceanography	
GEOL 513	Hydrogeology	
GGS 656	The Hydrosphere	
Lithosphere:		
GEOL 506	Soil Science	
GGS 657	The Lithosphere	
	or GEOL 601 The Lithosphere	
Total Credits		9

Techniques

Code	Title	Credits
Select two courses from the following:		6
GGS 553	Geographic Information Systems	
GGS 560	Quantitative Methods	
GGS 579	Remote Sensing	
GGS 680	Earth Image Processing	
GGS 754	Earth Science Data and Advanced Data Analysis	
Courses can be substituted with advisor approval		
Total Credits		6

Colloquium

Code	Title	Credits
GGS 900	Geography and Geoinformation Science Colloquium	1

Select one from the following:	1
GEOL 536 Paleontology Seminar	
GEOL 792 Seminar in Earth Systems Science, Geology, Earth Science	
CLIM 991 Climate Dynamics Seminar	
Total Credits	2

Electives

Code	Title	Credits
Select 10 credits of courses at the 500 to 900-level (excluding 700, 798, and 799 courses)		10
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

Code	Title	Credits
Select 3 credits from the following:		3
GGS 799 Thesis		
GEOL 799 Master's Thesis in Earth Systems Science		
CLIM 799 Master's Thesis in Climate		
Total Credits		3

Project

Code	Title	Credits
Select one from the following:		1
GGS 700 Comprehensive Exam		
GEOL 700 Comprehensive Exam		
CLIM 700 Climate Comprehensive Exam		
Select one from the following:		2
GGS 798 Research Project in Earth Systems Science		
GEOL 798 Master's Research Project in Earth Systems Science		
CLIM 798 Master's Climate Research Project		
Total Credits		3