

# DEPARTMENT OF GEOGRAPHY AND GEOINFORMATION SCIENCE

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## Administration

- Dieter Pfoser, Chair
- Nathan R. Burtch, Associate Chair, Undergraduate Coordinator
- Konrad Wessels, Associate Chair for Research
- Ruixin Yang, Graduate Coordinator
- Christine Rosenfeld, Online Coordinator

Located in the heart of Fairfax, just a few miles from Washington DC, the Department of Geography and Geoinformation Science (GGS) offers an outstanding environment to study and perform cutting-edge research in remote sensing, geography, geoinformatics, Earth systems science, and their various sub-disciplines.

With a variety of educational offerings, ranging from undergraduate programs to graduate certificates and M.S. and Ph.D. programs, a strong and broad research agenda, and superb name recognition within the leading agencies and companies in our field, our department is a premier choice for academic education.

## Undergraduate Programs

The Department of Geography and Geoinformation Science offers a Geography, BA (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-ba/>) and a Geography, BS (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-bs/>). The department also offers accelerated master's program opportunities for the Geographic and Cartographic Sciences, MS (<https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geographic-cartographic-sciences-ms/>) and the Geoinformatics and Geospatial Intelligence, MS (<https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geoinformatics-geospatial-intelligence-ms/>).

## Minors

For students pursuing any major in the university, the department offers a Geography Minor (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-minor/>) (fully available online), a Geographic Information Systems Minor (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geographic-information-systems-minor/>) (research and scholarship intensive), as well as an Urban Informatics Minor (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/urban-informatics-minor/>).

## Graduate Degrees

Graduate programs are distinguished by an emphasis on cutting-edge research and their applications toward solving practical problems in human and environmental realms. Degree options include three master's degrees and one doctoral program.

## Graduate Certificates

For students wishing to pursue graduate-level specialization and skill advancement in specific, focused application areas the department offers the following graduate-level certificates: Environmental GIS and Biodiversity Conservation Graduate Certificate (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/environmental-gis-biodiversity-conservation-graduate-certificate-ggs/>), Geographic Information Science Graduate Certificate (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geographic-information-science-graduate-certificate/>), G (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geographic-information-science-graduate-certificate/jeospatial-intelligence-graduate-certificate/>), and Remote Sensing and Image Processing Graduate Certificate (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/remote-sensing-image-processing-graduate-certificate/>). Students may take these as stand-alone certificates or, under certain circumstances, pursue them concurrently with another graduate degree program. Certificate coursework may be applicable toward other graduate degree requirements. In order to gain admission into a graduate certificate program, students must hold a bachelor's degree from a regionally accredited institution and must apply for and be admitted into the corresponding program.

## Master's Programs

The Earth Systems Science, MS (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/earth-systems-science-ms-ggs/>) (offered jointly with the Department of Atmospheric, Oceanic and Earth Sciences (<http://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/>)) provides a global systems approach to the study of the atmosphere, hydrosphere and lithosphere. The degree's emphasis is on the observation and quantitative analysis of Earth systems. The Geographic and Cartographic Sciences, MS (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geographic-cartographic-sciences-ms/>) focuses on techniques to compile, display and analyze spatial data. The Geoinformatics and Geospatial Intelligence, MS (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geoinformatics-geospatial-intelligence-ms/>) focuses primarily on computational approaches that support the synthesis and analysis of diverse data types in order to identify and monitor complex events and phenomena that manifest themselves over space and time.

## Earth Systems and Geoinformation Sciences, PhD

The Earth Systems and Geoinformation Sciences, PhD (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/earth-systems-geoinformation-sciences-phd/>) combines and extends the three scientific avenues mapped by our master's programs to provide a thorough and interdisciplinary approach to doctoral studies.

## Distance Education

While all courses and programs listed are offered in traditional face-to-face on campus teaching, the department offers select programs through fully online modules. These online programs include an online

version of both the BA (<https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-ba/>) and BS in Geography (<https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-bs/>), the Geography Minor (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-minor/>), the Geospatial Intelligence Graduate Certificate (<http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geospatial-intelligence-graduate-certificate/>), and the Geoinformatics and Geospatial Intelligence, MS (<https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geoinformatics-geospatial-intelligence-ms/>).

## Courses Available Online

Individual courses which are currently available online (in addition to their traditional delivery modes) are:

Code	Title	Credits
GGG 101	Major World Regions (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	3
GGG 102	Physical Geography (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	3
GGG 103	Human Geography (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	3
GGG 110	Introduction to Geoinformation Technologies	3
GGG 121	Dynamic Atmosphere and Hydrosphere (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	4
GGG 122	Dynamic Geosphere and Ecosphere	4
GGG 300	Quantitative Methods for Geographical Analysis	3
GGG 302	Global Environmental Hazards	3
GGG 303	Geography of Resource Conservation (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	3
GGG 309	Introduction to Weather and Climate	3
GGG 310	Cartographic Design	3
GGG 311	Geographic Information Systems	3
GGG 312	Physical Climatology	3
GGG 315	Geography of the United States	3
GGG 317	Geography of China (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	3
GGG 379	Remote Sensing	3
GGG 380	Geography of Virginia	3
GGG 415	Seminar in Geographic Thought and Methodology (Mason Core) ( <a href="http://catalog.gmu.edu/mason-core/">http://catalog.gmu.edu/mason-core/</a> )	3
GGG 416	Satellite Image Analysis	3
GGG 462	Web-based Geographic Information Systems	3
GGG 463	RS: GIS Analysis and Application	3
GGG 550	Geospatial Science Fundamentals	3
GGG 551	Cartographic Design	3
GGG 553	Geographic Information Systems	3
GGG 560	Quantitative Methods	3
GGG 579	Remote Sensing	3

GGG 650	Introduction to GIS Algorithms and Programming	3
GGG 664	Spatial Data Structures	3
GGG 680	Earth Image Processing	3
GGG 681	Social Media Analysis	3
GGG 684	Selected Topics in Geospatial Intelligence	3
GGG 685	Capstone Course in Geoinformatics	3
GGG 689	Seminar in Geographic Thought and Methodology	3
GGG 692	Web-based Geographic Information Systems	3
GGG 787	Scientific Data Mining for Geoinformatics	3

## Faculty

### Department Faculty

#### Professors

Di, Houser, Pfoser (chair), Qu, D. Sun, Wong, C. Yang

#### Associate Professors

Burtch (undergraduate coordinator), Komwa, Leslie, Rice, Rosenfeld (online coordinator), Wessels, R. Yang (graduate coordinator)

#### Assistant Professors

Anderson, Ermagun, Kar, Oughton,

#### Instructors

Mandable

#### Adjunct Faculty

Artman, Debnath, Jackson, Luna, Resmini, Ward, Weaver, Wolf, Young

## Requirements & Policies

### Requirements

#### Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in geography fulfill this requirement by successfully completing GGS 415 Seminar in Geographic Thought and Methodology (Mason Core) (<http://catalog.gmu.edu/mason-core/>).

### Policies

Students are governed by the university's policies (<http://catalog.gmu.edu/policies/>).

#### GGG Lab Use

Access to GGS lab space is contingent upon active student status and registration in GGS courses. Labs are key card accessible and only authorized students may use the labs for academic work.

#### Non-degree Status

Applicants who have not been admitted to a specific graduate degree or certificate program and still wish to attend courses may apply for non-degree studies. This is intended for students who do not seek a specific degree. These students must apply for non-degree status and be

admitted through a process comparable to the one followed by degree-seeking students.

While it may be possible to transfer some of the credits earned in non-degree status to a degree program, such transfers are not automatic. Non-degree students who intend to transfer their credits to a degree program should discuss this in a timely manner with the appropriate department coordinator. Further information can be found in the Non-degree Enrollment (<http://catalog.gmu.edu/admissions/non-degree-enrollment/>) section of this catalog.

## Programs

- Earth Systems Science, MS (GGS)
- Earth Systems and Geoinformation Sciences, PhD
- Environmental GIS and Biodiversity Conservation Graduate Certificate
- Geographic Information Science Graduate Certificate
- Geographic Information Systems Minor
- Geographic and Cartographic Sciences, MS
- Geography Minor
- Geography, BA
- Geography, BS
- Geoinformatics and Geospatial Intelligence, MS
- Geospatial Intelligence Graduate Certificate
- Remote Sensing and Image Processing Graduate Certificate
- Urban Informatics Minor