GEOINFORMATICS AND GEOSPATIAL INTELLIGENCE, MS

Banner Code: SC-MS-GEOI

Academic Advising

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Website: cos.gmu.edu/ggs/academic-programs/ms-in-geoinformatics-and-geospatial-intelligence/

The program addresses the emerging demand for scientists trained in the collection, organization, analysis, and dissemination of information about physical features, man-made structures, moving objects, people, and events that are geo-referenced or geo-located. This program focuses primarily on the computational approaches that support the synthesis and analysis of diverse types of data in order to identify and monitor complex events and phenomena that manifest over space and time. While geospatial intelligence has a strong Department of Defense connotation, the principles behind it have a significant dual use potential, addressing the needs of a broader audience, ranging for example from intelligent navigation in urban spaces to emergency response systems for natural and man-made disasters.

The MS is designed to expose students to fundamental theoretical principles and practical applications involving:

- Geographic Information Science
- Digital image analysis as it applies to geoinformatics and geospatial intelligence
- Computational principles for geoinformatics and intelligence

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 and Application Requirements

Applicants for this master’s should hold a BA or BS degree in a discipline related to the program’s theme from a regionally accredited university, with a minimum GPA of 3.00, including courses in differential and integral calculus. A working knowledge of a computer programming language is a plus. When the background of an individual student does not meet the program’s requirements, remedial or preparatory courses tailored to student’s needs may be recommended. To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now). Official transcripts from each college and graduate institution attended, a current résumé, and a goals statement will be required.

Applicants will 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 US institution. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP6 Graduate Policies.

Secondary Program Options

Students enrolled in this master’s program have the option of adding a secondary graduate certificate program. Depending upon the secondary program chosen, many courses may be applicable to both the certificate and the master’s. Before adding a secondary program, students are advised to carefully review AP6.8 Requirements for Graduate Certificates and AP6.9 Requirements for Master’s Degrees. Faculty advisors should be contacted for further guidance and for graduate certificate program suggestions.

Requirements

Degree Requirements

Total credits: 33

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>GGS 550</td>
<td>Geospatial Science Fundamentals</td>
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<tr>
<td>GGS 553</td>
<td>Geographic Information Systems</td>
<td>3</td>
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<tr>
<td>GGS 664</td>
<td>Spatial Data Structures</td>
<td>3</td>
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<tr>
<td>GGS 684</td>
<td>Selected Topics in Geospatial Intelligence</td>
<td>3</td>
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<td>GGS 685</td>
<td>Capstone Course in Geoinformatics</td>
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<tr>
<td>GGS 680</td>
<td>Earth Image Processing</td>
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<tr>
<td>GGS 787</td>
<td>Scientific Data Mining for Geoinformatics</td>
<td>3</td>
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Total Credits: 21

Thesis

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<td>Thesis</td>
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</table>

Total Credits: 3

Electives

Select three courses from the groups below (course selections must also be approved by the program coordinator), with no more than two from a single group (i.e. courses are taken from at least two groups):

**Image Analysis:**
- GGS 562 Photogrammetry
- GGS 579 Remote Sensing
- GGS 740 Hyperspectral Imaging Systems
- GGS 760 Advanced Topics in Remote Sensing
- GGS 840 Hyperspectral Imaging Applications
Accelerated Master's

Geography, BS/Geoinformatics and Geospatial Intelligence, Accelerated MS

Overview

Offered by the Department of Geography and Geoinformation Sciences (GGS) in the College of Science, this bachelor’s/accelerated master’s degree program enables highly qualified undergraduates to obtain the Geography, BS and the Geoinformatics and Geospatial Intelligence, MS degrees within an accelerated timeframe. The program strategy enables students to undertake graduate coursework during their final year in the bachelor’s degree. This 147 credit program prepares students for professional careers where geoinformation management, geographic analysis, and geointelligence and geovisualization are of importance.

Students in this accelerated degree program must fulfill all university requirements for the Geography, BS and the Geoinformatics and Geospatial Intelligence, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP6.7 Bachelor’s/Accelerated Master’s Degrees.

Application Requirements

Students with an overall GPA of at least 3.0 may apply for provisional acceptance into this accelerated master’s program after completing at least 90 undergraduate credits. Additionally, they must have completed the following courses with a GPA of 3.0 or better: GGS 102 Physical Geography (Mason Core) or GGS 121 Dynamic Atmosphere and Hydrosphere (Mason Core), GGS 103 Human Geography (Mason Core), GGS 110 Introduction to Geoinformation Technologies, GGS 300 Quantitative Methods for Geographical Analysis, GGS 310 Introduction to Digital Cartography, GGS 311 Introduction to Geographic Information Systems, GGS 412 Air Photography Interpretation, MATH 113 Analytic Geometry and Calculus I (Mason Core), and MATH 114 Analytic Geometry and Calculus II or IT 207 Applied IT Programming or STAT 250 Introductory Statistics I (Mason Core).

Accelerated Option Requirements

Students admitted to this program may start taking graduate courses after completing 90 undergraduate credits. Up to 6 credits of graduate coursework may be applied to both undergraduate degree and the master’s degree. If students earn at least a 3.0 in these classes, they are granted advanced standing in the master’s program and must then complete 27 additional credits to receive the master’s degree. All other master’s degree requirements must be met.

Reserve Graduate Credit

During the bachelor’s degree status, students may take up to 6 graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master’s degree credits accordingly (e.g., with 6 credits counted towards undergraduate degree plus the maximum 6 reserve credits, the master’s degree can be completed with 21 graduate credits). The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. To apply the reserved credits to the master’s degree, students must request their transfer from the undergraduate degree to the graduate degree via the Bachelor’s/Accelerated Master’s Transition Form found on the Office of the University Registrar website.

GGS 563 Advanced Geographic Information Systems
GGS 653 Geographic Information Analysis
GGS 675 Location Science
GGS 772 Cloud Geographic Information Systems
GGS 791 Advanced Spatial Statistics

Computational Geoinformatics:

GGS 650 Introduction to GIS Algorithms and Programming
GGS 671 Algorithms and Modeling in GIS
GGS 692 Web-based Geographic Information Systems
GGS 754 Earth Science Data and Advanced Data Analysis
GGS 773 Interoperability of Geographic Information Systems

Total Credits: 9

Accelerated Master's