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

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 AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/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 AP.6.8 Requirements for Graduate Certificates (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-8) and AP.6.9 Requirements for Master's Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-9). 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

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

Total Credits: 21

#### Thesis

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGS 799</td>
<td>Thesis</td>
<td>3</td>
</tr>
</tbody>
</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:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGS 562</td>
<td>Photogrammetry</td>
<td>3</td>
</tr>
</tbody>
</table>
GGS 579  Remote Sensing
GGS 740  Hyperspectral Imaging Systems
GGS 760  Advanced Topics in Remote Sensing
GGS 840  Hyperspectral Imaging Applications

Geographic Information Science:
GGS 550  Geospatial Science Fundamentals
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 681  Social Media Analysis
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

Bachelor’s Degree (any)/Geoinformatics and Geospatial Intelligence, Accelerated MS

Overview
Offered by the Department of Geography and Geoinformation Sciences (GGS) (http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/) in the College of Science (http://catalog.gmu.edu/colleges-schools/science/), this bachelor’s/accelerated master’s degree program enables highly qualified undergraduates to obtain any Mason bachelor’s degree 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. In the case of a 120 credit bachelor’s program, this accelerated master’s option can be completed as a 147 credit program. This accelerated pathway 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 bachelor’s program and the Geoinformatics and Geospatial Intelligence, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor’s/Accelerated Master’s Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

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 75-100 undergraduate credits. Additionally, students must have completed the following courses with a combined GPA of 3.0 or better: GGS 300 Quantitative Methods for Geographical Analysis, GGS 311 Introduction to Geographic Information Systems, and any one upper level GGS-prefixed course.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. However, this accelerated master’s does not require GRE test scores.

While being undergraduate students, accelerated master’s students must complete the two graduate courses indicated on their Accelerated Master’s Program Application (obtained from the Office of Academic and Student Affairs) with a minimum grade of B in each course. They must maintain a minimum GPA of 3.0 in all coursework and in coursework applied to their major.

At the beginning of their final undergraduate semester, they must submit the Bachelor’s/Accelerated Master’s Transition Form (found on the Office of the University Registrar website). Students must begin their master’s program in the semester immediately following the term of undergraduate degree conferral. Students should consult with their faculty advisor in the Department of Geography and Geoinformation Science and the Office of Academic and Student Affairs to obtain further guidance.

Accelerated Option Requirements
Students admitted to this program may start taking graduate courses after completing 90 undergraduate credits. Students must register for one of the following three courses in their first semester of accelerated coursework:

<table>
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<td>3</td>
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<td>Geographic Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>GGS 579</td>
<td>Remote Sensing</td>
<td>3</td>
</tr>
</tbody>
</table>

Including the course chosen above, 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 B 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.
Geography, BA/Geoinformatics and Geospatial Intelligence, Accelerated MS

Overview
Offered by the Department of Geography and Geoinformation Sciences (GGS) (http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/) in the College of Science (http://catalog.gmu.edu/colleges-schools/science/), this bachelor’s/accelerated master’s degree program enables highly qualified undergraduates to obtain the Geography, B (http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/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, BA (https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-ba/) and the Geoinformatics and Geospatial Intelligence, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor’s/Accelerated Master’s Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

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 75-100 undergraduate credits. Additionally, students must have completed the following courses with a combined GPA of 3.0 or better:
- GGS 300 Quantitative Methods for Geographical Analysis
- GGS 311 Introduction to Geographic Information Systems
- Any one upper level GGS-prefixed course.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. However, this accelerated master’s does not require GRE test scores.

While being undergraduate students, accelerated master’s students must complete the two graduate courses indicated on their Accelerated Master’s Program Application (obtained from the Office of Academic and Student Affairs) with a minimum grade of B in each course. They must maintain a minimum GPA of 3.0 in all coursework and in coursework applied to their major.

At the beginning of their final undergraduate semester, they must submit the Bachelor’s/Accelerated Master’s Transition Form (found on the Office of the University Registrar website). Students must begin their master’s program in the semester immediately following the term of undergraduate degree conferral. Students should consult with their faculty advisor in the Department of Geography and Geoinformation Science and the Office of Academic and Student Affairs to obtain further guidance.

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 B 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.

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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 (http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/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 (http://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geography-bs/) and the Geoinformatics and Geospatial Intelligence, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor’s/Accelerated Master’s Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

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- GGS 300 Quantitative Methods for Geographical Analysis
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**Accelerated Option Requirements**

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