

Program Change Request

Date Submitted: 11/12/25 1:38 pm

Viewing: **SC-BS-GEOG : Geography, BS**

Last approved: 04/29/24 12:39 pm

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Changes proposed by: nburtch

**Catalog Pages
Using this Program**

[Geography, BS](#)

In Workflow

- 1. **GGS Chair**
- 2. **SC Curriculum Committee**
- 3. SC Assistant Dean
- 4. Assoc Provost- Undergraduate
- 5. Registrar-Programs

Approval Path

- 1. 11/13/25 2:04 pm
Nathan Burtch
(nburtch): Approved for GGS Chair

History

- 1. Nov 1, 2017 by
clmig-jwehrheim
- 2. Jan 11, 2018 by
rzachari
- 3. Feb 26, 2018 by
Jennifer Bazaz
Gettys (jbazaz)
- 4. Mar 8, 2018 by
rzachari

Are you completing this form on someone else's behalf?

No

Effective Catalog: 2026-2027

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Geography, BS

Banner Title: Geography, BS

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar’s Office Use Only – Program Start Term

Registrar/OAPI Use Only – SCHEV Letter

Registrar/OAPI Use Only – SACSCOC Status

Concentration(s):

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
1	Geoinformatics	GINF
2	Urban Science	URBS
3	Geospatial Intelligence	GI

5. Feb 3, 2019 by
Dieter Pfoser
(dpfoser)
6. Feb 10, 2020 by
Nathan Burtch
(nburtch)
7. Feb 9, 2022 by
Timothy Leslie
(tleslie)
8. May 20, 2022 by
Jennifer Bazaz
Gettys (jbazaz)
9. May 16, 2023 by
Jennifer Bazaz
Gettys (jbazaz)
10. Apr 29, 2024 by
Jennifer Bazaz
Gettys (jbazaz)

**Registrar/IRR Use
Only –
Concentration CIP
Code****College/School:**

College of Science

**Department /
Academic Unit:**

Geography & Geoinformation Science

**Jointly Owned
Program?**

No

**Is there an
embedded degree
as part of a
program?****Justification**

What: Adding footnote that GGS 201T is acceptable to substitute for GGS 110

Why: In discussing with our NOVA partners as part of Advance, their students are likely to skip the course that transfers as GGS 110, going to take their sequence of GIS 200 and 201. These currently transfer as GGS L311 and GGS L470, respectively. We want to provide flexibility for transfer students and are proposing a new GGS 201T equivalency for their GIS 201, as we do not have a comparable intermediate GIS course for direct transfer. This allows flexibility by maintaining the true transfer equivalency for GGS 110 for students that take the NOVA version, while also allowing a more intermediate-level course to sub for a more basic 100-level course, should the student choose so.

What: Add footnote for GGS 485

Why: Consistency; we list GGS 415 as the writing intensive Mason Core, so this is listed at the Apex course.

What: Adding a Spatial Analysis set of electives to the Geospatial Intelligence Concentration,

reducing Remote Sensing electives from 3 to 2 courses

Why: Currently students take 3 remote sensing electives. The selection of these courses can be tight logistically if students transfer/declare the concentration late. While geospatial intelligence (GEOINT) still has heavy emphasis on imagery and remote sensing, there is also a need for GEOINT practitioners to have additional advanced geospatial analysis and visualization techniques, as described by the NGA and USGIF ("Geospatial intelligence, or GEOINT, is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information.")

**Total Credits
Required:**

Total credits: minimum 120

Registrar's Office Use Only - Program Code:

SC-BS-GEOG

**Registrar/IRR Use
Only – Program CIP
Code**

**Admission
Requirements:**

Admissions

University-wide admissions policies can be found in the [Undergraduate Admissions Policies](#) section of this catalog.

To apply for this program, please complete the [George Mason University Admissions Application](#).

**Program-Specific
Policies:**

Policies

Students must fulfill all [Requirements for Bachelor's Degrees](#) including the [Mason Core](#).

[GG5 415](#) Seminar in Geographic Thought and Methodology([Mason Core](#)) fulfills the writing intensive requirement.

For policies governing all undergraduate programs, see [AP.5 Undergraduate Policies](#).

Students should refer to the [Admissions & Policies](#) tab for specific policies related to this program.

**Degree
Requirements:**

Candidates for the Geography, BS degree must complete the Core Courses, Breadth and Experience Courses, Elective Courses, and one concentration, all with a minimum GPA of 2.00:

Geography

Core Courses

<u>GGG 102</u>	Physical Geography(<u>Mason Core</u>)	3-4
or <u>GGG 121</u>	Dynamic Atmosphere and Hydrosphere(<u>Mason Core</u>)	
or <u>GGG 122</u>	Dynamic Geosphere and Ecosphere	
<u>GGG 103</u>	Human Geography(<u>Mason Core</u>)	3
<u>GGG 110</u>	Introduction to Geoinformation Technologies ¹	3
<u>GGG 300</u>	Quantitative Methods for Geographical Analysis	3
<u>GGG 310</u>	Cartographic Design	3
<u>GGG 311</u>	Geographic Information Systems	3
<u>GGG 415</u>	Seminar in Geographic Thought and Methodology(<u>Mason Core</u>) ²	3
<u>GGG 485</u>	Capstone in Geography and Geoinformation Science(<u>Mason Core</u>) ³	3
Total Credits		24-25

¹
Credit for the transfer course GGS 201T can be substituted for the GGS 110 requirement

²
[Fulfills the writing intensive requirement.](#)

³
[Fulfills Apex course requirement.](#)

Breadth and Experience Courses

Spatial Computing

<u>GGG 366</u>	Spatial Computing	3
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<u>GGG 379</u>	Remote Sensing	3
<u>MATH 113</u>	Analytic Geometry and Calculus I(<u>Mason Core</u>)	4
Systematic Courses		
Select one from the following courses:		3
<u>GGG 301</u>	Political Geography(<u>Mason Core</u>)	
<u>GGG 302</u>	Global Environmental Hazards	
<u>GGG 303</u>	Geography of Resource Conservation(<u>Mason Core</u>)	
<u>GGG 304</u>	Population Geography(<u>Mason Core</u>)	
<u>GGG 305</u>	Economic Geography	
<u>GGG 306</u>	Urban Geography	
<u>GGG 307</u>	Geographic Approaches for Sustainable Development	
<u>GGG 309</u>	Introduction to Weather and Climate	
<u>GGG 312</u>	Physical Climatology	
<u>GGG 314</u>	Severe and Extreme Weather	
<u>GGG 321</u>	Biogeography	
<u>GGG 340</u>	Health Geography	
<u>GGG 344</u>	Military Geography	
<u>GGG 346</u>	Geography of Religions and Belief Systems	
<u>GGG 357</u>	Urban Planning	
<u>GGG 399</u>	Select Topics in GGS	

Regional Courses

Select one from the following courses:

3

[GGS 315](#)

Geography of the United States

[GGS 316](#)

Geography of Latin America

[GGS 317](#)Modern China: A Geographical Appraisal of its Land, People, Culture, and Politics([Mason Core](#)).[GGS 320](#)

Geography of Europe

[GGS 325](#)

Geography of North Africa and the Middle East

[GGS 326](#)

Geography of Eastern Europe and Russia

[GGS 333](#)

Issues in Regional Geography

[GGS 380](#)

Geography of Virginia

Total Credits

16

Elective Courses

[Select 3 credits of GGS courses](#)

3

[Select 6 credits of upper division GGS courses](#)

6

Total Credits

9

Geoinformatics Concentration (GINF)

Geoinformatics is a technical field of study in geography in which digital spatial information is captured, stored, processed, visualized, and analyzed. Geoinformatics encompasses theories and methods of understanding geoinformation, and broadly incorporates geographic information systems (GIS), remote sensing (RS), cartography and geovisualization, and spatial computing. Students that complete the Geoinformatics Concentration develop skills in applying spatial scientific techniques to digital spatial information, in order to address complex challenges in social and environmental systems.

Select 6 courses from the following; no more than two courses outside of the GGS prefix are permitted:

18-19

[GGS 308](#)

Field Mapping Techniques

or [GEOL 303](#)

Field Mapping Techniques

<u>GGG 354</u>	Data Analysis and Global Change Detection Techniques
<u>GGG 411</u>	Geovisualization
<u>GGG 416</u>	Satellite Image Analysis
<u>GGG 422</u>	Drone Remote Sensing
<u>GGG 426</u>	Physical Fundamentals of Remote Sensing
<u>GGG 429</u>	Remote Sensing of the Environment and Earth System
<u>GGG 432</u>	Spatial Modeling for Public Health
<u>GGG 462</u>	Web-based Geographic Information Systems
<u>GGG 463</u>	RS: GIS Analysis and Application
<u>GGG 470</u>	Special Topics in Geographic Techniques
<u>GGG 499</u>	GGG Independent Study (when the topic has been approved by an advisor)
<u>BUS 210</u>	Business Analytics I(<u>Mason Core</u>)
<u>CDS 130</u>	Computing for Scientists(<u>Mason Core</u>)
<u>CDS 205</u>	Introduction to Agent-based Modeling and Simulation
<u>CDS 230</u>	Modeling and Simulation I
<u>CDS 292</u>	Introduction to Social Network Analysis(<u>Mason Core</u>)
<u>CDS 403</u>	Machine Learning Applications in Science
<u>CDS 421</u>	Computational Data Science
<u>CRIM 320</u>	Crime and Place
<u>CS 112</u>	Introduction to Computer Programming(<u>Mason Core</u>)
<u>EVPP 430</u>	Fundamentals of Environmental Geographic Information Systems

<u>GEOL 340</u>	Modern Methods in Geology	
<u>IT 214</u>	Database Fundamentals	
<u>IT 416</u>	Machine Learning for Information Sciences	
<u>MIS 303</u>	Introduction to Business Information Systems(<u>Mason Core</u>)	
<u>SOCI 213</u>	Statistics for the Behavioral Sciences(<u>Mason Core</u>)	
<u>SOCI 405</u>	Analysis of Social Data	
<u>STAT 250</u>	Introductory Statistics I(<u>Mason Core</u>)	
<u>STAT 260</u>	Introduction to Statistical Practice I	
<u>STAT 334</u>	Introduction to Probability Models and Simulation	
<u>STAT 350</u>	Introductory Statistics II	
<u>SYST 130</u>	Introduction to Computing for Digital Systems Engineering(<u>Mason Core</u>)	
Total Credits		18-19

Geospatial Intelligence Concentration (GI)

The geospatial intelligence (or geointelligence) concentration is designed for students to deepen their knowledge about computational approaches to geoinformation, with particular emphasis in techniques of remote sensing and digital image analysis. While geospatial intelligence has a strong Department of Defense connotation, the techniques developed in this concentration have wide applicability regarding location intelligence over a diverse range of uses and in public, private, and non-profit sectors.

Core Courses

<u>GGG 384</u>	Special Topics in Geospatial Intelligence	3
<u>CRIM 310</u>	Introduction to the Intelligence Community	3

Remote Sensing Electives

Select three courses from the following:

9

Select two courses from the following:6

<u>GGG 416</u>	Satellite Image Analysis
<u>GGG 422</u>	Drone Remote Sensing
<u>GGG 426</u>	Physical Fundamentals of Remote Sensing
<u>GGG 429</u>	Remote Sensing of the Environment and Earth System
<u>GGG 470</u>	Special Topics in Geographic Techniques (When the topic has been approved by an advisor)
<u>GGG 499</u>	GGG Independent Study (When the topic has been approved by an advisor)

Spatial Analysis electivesSelect one course from the following:3

<u>GGG 354</u>	<u>Data Analysis and Global Change Detection Techniques</u>
<u>GGG 411</u>	<u>Geovisualization</u>
<u>GGG 432</u>	<u>Spatial Modeling for Public Health</u>
<u>GGG 462</u>	<u>Web-based Geographic Information Systems</u>
<u>GGG 463</u>	<u>RS: GIS Analysis and Application</u>

Intelligence Electives

Select one course from the following:

3-4

<u>CDS 468</u>	Image Operators and Processing
<u>CRIM 312</u>	Intelligence Analysis Techniques
<u>CRIM 350</u>	Counterintelligence
<u>CRIM 460</u>	Surveillance and Privacy in Contemporary Society
or <u>GOVT 460</u>	Surveillance and Privacy in Contemporary Society

<u>GOVT 346</u>	American Security Policy	
<u>GOVT 347</u>	International Security	
<u>MATH 175</u>	Mathematics of Cryptography: An Introduction	
<u>SOCI 391</u>	Big Data, Technology, and Society	
<u>SOCI 405</u>	Analysis of Social Data	
Total Credits		18-19

Urban Science Concentration (URBS)

We are living in an increasingly urban world. As concentrations of human activity, cities and urban environments are data-rich, requiring geo-computational approaches to understand complex city systems and urban challenges. Through this concentration, students will apply geoinformational techniques to large-scale data to urban phenomenon like transportation, mobility, urban planning, and urban development.

Core Courses

<u>GGG 306</u>	Urban Geography	3
<u>CDS 303</u>	Scientific Data Mining	3

Urban Electives

Select two courses from the following: ¹

6-7

<u>GGG 357</u>	Urban Planning	
or <u>GOVT 357</u>	Urban Planning	
<u>ANTH 382</u>	Urban Anthropology(<u>Mason Core</u>)	
<u>ARTH 311</u>	Design of Cities(<u>Mason Core</u>)	
<u>CONF 329</u>	Community Engagement and Collaborative Problem Solving	
<u>EVPP 442</u>	Urban Ecosystems and Processes	

<u>EVPP 490</u>	Special Topics in Environmental Science and Policy (When the topic is "Urban Smart Growth Strategies")
<u>GOVT 464</u>	Issues in Public Policy and Administration (when title is "Urban Economic Development in Smart Growth Era")
<u>NUTR 435</u>	Urban Agriculture
<u>SOCI 332</u>	The Urban World(<u>Mason Core</u>)

Mapping and Spatial Analysis Electives

Select one course from the following:

3

<u>GGG 308</u>	Field Mapping Techniques
<u>GGG 411</u>	Geovisualization
<u>GGG 416</u>	Satellite Image Analysis
<u>GGG 432</u>	Spatial Modeling for Public Health
<u>GGG 462</u>	Web-based Geographic Information Systems
<u>GGG 463</u>	RS: GIS Analysis and Application
<u>GGG 470</u>	Special Topics in Geographic Techniques (When the topic has been approved by an advisor)
<u>GGG 499</u>	GGG Independent Study (When the topic has been approved by an advisor)

Computational Data Science Electives

Select one course from the following:

3

<u>CDS 201</u>	Introduction to Computational Social Science
<u>CDS 205</u>	Introduction to Agent-based Modeling and Simulation
<u>CDS 230</u>	Modeling and Simulation I
<u>CDS 292</u>	Introduction to Social Network Analysis(<u>Mason Core</u>)

CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases(Mason Core)	
CDS 421	Computational Data Science	
Total Credits		18-19

1
Other urban topics courses may be taken with advisor approval.

Retroactive
Requirements
Updates:

Plan of Study:

Honors
Information:

Honors in the Major

To graduate with departmental honors in Geography, students must have a minimum GPA of 3.50 in GGS courses, an overall GPA of 3.50, and complete the following courses each with a grade of 'B+' or above:

GGS 463	RS: GIS Analysis and Application	3
GGS 499	GGS Independent Study ¹	3
3 credits of 500-699 level GGS courses ²		3

1
Before registering for this course, students must have identified a topic under the guidance of a full-time faculty member following departmental guidelines.

2
Eligibility for these courses is restricted to students who obtain permission from the undergraduate coordinator or those in the Accelerated Master’s program.

Accelerated
Description/Dual
Degree
Description:

INTO-Mason
Requirements:
College
Requirements &
Policies:

Department /
Academic Unit
Requirements &
Policies
Program Outcomes

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

**Courses offered via
distance (if
applicable):**

Indicate whether

**What is the
primary delivery
format for the
program?**

Face-to-Face Only

Does any portion of this program occur off-campus?

No

Are you working with a vendor / other collaborators to offer your program?

No

**Related
Departments**

**Could this program prepare students for any type of professional licensure, in
Virginia or elsewhere?**

No

No

Is the content of the
...
Is this now program
...
Is this now program
...
...
What are the
...

No

No

0%-24%

No

No

No

No

<https://workingcatalog.gmu.edu/courseleaf/approve/>

No

Additional library/learning resources needed?

No

Have you reached out to the Libraries to determine whether there are adequate resources to support your program? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? No

Sustainability-focused
List sustainability-
List sustainability-

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

Executive Summary

**Reviewer
Comments**

**Additional
Comments**

Is this course required of all students in this degree program?

%wi_required.eshtml%

Key: 149