Program Change Request

Date Submitted: 02/05/24 10:18 pm

Viewing: **SC-PHD-ESGS : Earth Systems and Geoinformation Sciences, PhD**

Last approved: 04/28/23 12:35 pm

Last edit: 03/01/24 10:37 am

Changes proposed by: nburtch

Catalog Pages
Using this Program
[Earth Systems and Geoinformation Sciences, PhD](#)

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

No

Effective Catalog: 2024-2025

Program Level: Graduate

Program Type: Doctoral

Degree Type: Doctor of Philosophy

Title:
  Earth Systems and Geoinformation Sciences, PhD

Banner Title: Earth Systems & Geoinformation

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

In Workflow

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

Approval Path

1. 02/15/24 12:17 pm Nathan Burtch (nburtch): Approved for GGS Chair
2. 02/27/24 12:54 pm Jennifer Bazaz Gettys (jbazaz): Rollback to GGS Chair for SC Curriculum Committee
3. 03/15/24 11:34 am Nathan Burtch (nburtch): Approved for GGS Chair

History

1. Nov 9, 2017 by clmig-jwehrheim
2. Feb 15, 2018 by rzachari
3. Mar 7, 2019 by Jennifer Bazaz Gettys (jbazaz)
4. Mar 15, 2019 by Tory Sarro (vsarro)

Concentration(s):

Registrar/IRR Use Only – Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Geography & Geoinformation Science

Jointly Owned Program? No

Justification

What: Updating Research Synthesis to only be GGS 689

Why: Previously GGS 684 was also included as a research synthesis course. 684 is more of an overview of GeoInt organization, and does not provide enough experience towards PhD level proposal writing. GGS 689's focus on geographical theories and methods is the course we want our PhD students to take as a requirement, not just as an elective or a choice.

What: Adding GGS 504 and 615 to the Human Geography Core

Why: These are fairly recent additions to the curriculum and their addition here will limit the need for substitution forms.

What: Referring applicants to central admissions language and removing extraneous wording.

Why: To make the program more adaptable to changes in university policies.

Total Credits Required: Total credits: 72

Registrar's Office Use Only - Program Code:

SC-PHD-ESGS

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the ~~in~~ Graduate Admissions Policies section of this catalog. ~~.~~ International students and students having earned international degrees should also refer to Admission of

International Students for additional requirements.

~~To apply for this program, please complete the George Mason University Admissions Application.~~Eligibility

This program is intended for graduates who hold a MS or MA degree from an institution of higher education accredited by ~~in atmospheric science, climatology, meteorology, Earth science, geology, environmental science, remote sensing, hydrology, oceanography, geography, or~~ a Mason-recognized U.S. ~~related field.~~ institutional accrediting agency or international equivalent in atmospheric science, climatology, meteorology, Earth science, geology, environmental science, remote sensing, hydrology, oceanography, geography, or a related field.

Highly-qualified students with a BS or BA from an institution of higher education accredited by a Mason-recognized U.S. ~~in applicable fields are also encouraged to apply.~~ institutional accrediting agency or international equivalent in applicable fields are also encouraged to apply.

Knowledge of mathematics through calculus is preferred.

Interested applicants should contact the GGS ~~academic coordinator or the~~ graduate coordinator for more specific advice if needed. ~~advice.~~

Application Requirements

To apply, prospective students should submit ~~complete~~ the George Mason University Admissions Application and its supplemental documentation, three letters of recommendation, and a goals statement. ~~.~~
~~Official transcripts from each college and graduate institution attended, a current résumé, three letters of recommendation, and an expanded goals statement will berequired.~~GRE scores are not required for admission into this program, but are strongly encouraged if a student is seeking internal funding support.

Program-Specific Policies:

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Transferring Previous Graduate Credit into this Program

Previously earned and relevant graduate credits may be eligible for transfer into this program; details can be found in the Credit by Exam or Transfer section of this catalog.

~~Reduction of Credits For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognizedU.S.institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and~~

~~the associate dean for studentaffairs.See AP.6.5.2 Reduction of Credits for moreinformation.~~Secondary Program Options

Students enrolled in this doctoral program have the option of adding a secondary graduate certificate or master's program. Depending upon the secondary program chosen, many courses may be applicable to both programs. Before adding a secondary program, students are advised to carefully review AP.6.8 Requirements for Graduate Certificates or AP.6.9 Requirements for Master's Degrees and AP.6.10 Requirements for Doctoral Degrees. Faculty advisors should be contacted for further guidance and for secondary program suggestions.

Degree Requirements:

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

Core Courses

Students are required to choose from the following courses in the core areas below. Of the cores, students must complete at least one course in five of the cores and two courses in at least three of those five cores.

The core areas from which to choose these credits are: 24

Quantitative Core:

GGS 560 Quantitative Methods

GGS 754 Earth Science Data and Advanced Data Analysis

GGS 791 Advanced Spatial Statistics

Geoinformatics Core:

GGS 650 Introduction to GIS Algorithms and Programming

GGS 664 Spatial Data Structures

GGS 675 Location Science

GGS 692 Web-based Geographic Information Systems

GGS 787 Scientific Data Mining for Geoinformatics

Geosciences and Physical Geography Core:

GGS 656 The Hydrosphere

GGS 657 The Lithosphere

GGS 670 Introduction to Atmosphere and Weather

PHYS 575 Atmospheric Physics

Human Geography Core:

GGS 504 Population Geography

GGS 505 Transportation Geography

GGS 507 Geographic Approaches for Sustainable Development

GGS 516 Geography of Latin America

GGS 517 Geography of China

GGS 518 Geography of North Africa and the Middle East

GGS 526 Geography of Eastern Europe and Russia

GGS 533 Issues in Regional Geography

GGS 540 Health Geography

GGS 615 Economic Geography

GGS 704 Spatial Demography

Geographic Information Science Core:

GGS 553 Geographic Information Systems

GGS 563 Advanced Geographic Information Systems

Remote Sensing Core:

GGS 579 Remote Sensing

GGS 622 Drone Remote Sensing

GGS 626 Physical Fundamentals of Remote Sensing

GGS 629 Remote Sensing of the Environment and Earth System

GGS 680 Earth Image Processing

GGS 760 Advanced Topics in Remote Sensing

GGS 777 Remote Sensing Natural Hazards

Total Credits	24

Research Synthesis and Colloquium

Research Synthesis	3
~~Select one from the following:~~	~~3~~
~~GGS 684~~ ~~Selected Topics in Geospatial Intelligence~~	
GGS 689 Seminar in Geographic Thought and Methodology	
Colloquium	2
GGS 900 Geography and Geoinformation Science Colloquium (complete twice)	
Total Credits	5

Electives

In consultation with the advisor, students select credits necessary to reach 72 total credits 119-31

1

At least half of the elective credits taken at Mason must be from GGS courses.

Dissertation Research

Students take 12-24 credits, with at least 6 credits in GGS 999 Dissertation. After reaching candidacy, students must stay continuously enrolled GGS 999 Dissertation until defending their dissertation.

Select 12-24 credits from the following:	12-24
GGS 998 Dissertation Proposal	
GGS 999 Dissertation	
Total Credits	12-24

Dissertation Committee

All students will be assigned a temporary academic advisor when they first enroll in the program. No later than the end of the second year, each student should identify a dissertation advisor and form a doctoral committee. The

committee will be chaired by a GGS tenure or tenure-track professor and be composed of at least four members. GGS tenure or tenure-track faculty should be at least 50% and have larger committee membership than any other Mason department/academic unit or external organization. At least one member should be a tenure or tenure-track faculty member from another Mason department or program outside of GGS. All members of the committee must be Mason Graduate Faculty and approved by the department's chair.

Candidacy Examination

After completing all required courses, each student must take a candidacy exam administered by the dissertation committee. The exam will have written and oral components. Its purpose is to determine whether the student has acquired adequate general knowledge in the selected subject area, as well as much more detailed knowledge of the specific research topic planned for the dissertation.

Dissertation Proposal and Advancement to Candidacy

After students have completed all required courses and passed the candidacy exam, they should prepare an acceptable dissertation proposal. After the dissertation proposal is approved and the appropriate paperwork is completed, the student will be advanced to candidacy.

Doctoral Dissertation

The degree will be awarded upon completion of the required coursework and successful defense of a PhD dissertation that makes an original and significant contribution to the field.

Retroactive Requirements Updates:

Plan of Study:

Program Outcomes

Additional Program Information

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

Courses offered via distance (if applicable):

What is the primary delivery format for the program?   Both Face-to-Face and Distance

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

Are you adding or removing a licensure component?

No

Additional SCHEV & SACSCOC Information

**Is this change a simple retitling of an existing program, with no other changes, to any existing program content,
curriculum requirements, etc?**

No

**Does this change represent a repackaging of content in an existing approved degree/certificate program at the
same instructional level (i.e., baccalaureate, master's, or doctoral)?**

No

**Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as
content that is not currently included in an existing approved degree/certificate program at the same instructiona
level. Do not exclude gen ed credits in calculations for undergraduate programs.)**

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program?

No

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Additional library/learning resources needed?

No

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program?   No

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

Executive Summary

Reviewer Comments

Jennifer Bazaz Gettys (jbazaz) (02/27/24 12:54 pm): Rollback: To have recent revisions reviewed by dept. faculty.

Additional Comments

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

%wi_required.eschtml%

Key: 214