

# GEOGRAPHIC INFORMATION SCIENCE GRADUATE CERTIFICATE

Please click here (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/>) to see Geography and Environmental Sciences Department information.

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The Geographic Information Science (GISci) Certificate in the Department of Geography and Environmental Sciences is designed to provide CU Denver undergraduates and graduates, as well as non-degree seeking students interested in professional development, with proficiency in the application of spatial thinking, geographic information science, and geo-technologies in the social and physical sciences, spanning the natural, built and human environments and emphasizing human-environment interconnections. The GISci Certificate core establishes a broad foundation in spatial technologies and methodologies, including geographic information systems, remote sensing, cartography, spatial extensions to database management systems, and statistics. From this base, students can delve into various specialization areas depending on their interests.

Upon successful completion of the certificate, students will be able to:

- articulate and apply basic theoretical underpinnings of spatial analytical principles, methodologies, and techniques;
- effectively utilize at least three different types of software used for spatial analysis;
- apply geo-spatial thinking, geographic information science, and geo-technologies appropriately; and
- analyze diverse real-world problems that have a spatial dimension and develop alternative solutions to them.

## Eligibility

Geographic information science and geo-technologies have broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

You must complete the Application for GISci Certificate, which can be obtained from the GISci Certificate Coordinator. The application requires copies of former transcripts indicating that an undergraduate degree has been previously granted or an unofficial transcript from CU Denver showing that you are a current undergraduate or graduate student. This application is required to be formally registered in the GISci Certificate program, and must be completed no later than the semester prior to the scheduled completion of the certificate.

## Current CU Denver Students

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate,

and no later than the semester previous to completion of all the courses required to obtain the certificate.

## Former CU Denver Students or Graduates of Other Universities

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

**Admissions:** <https://www.ucdenver.edu/admissions/non-degree-admissions> (<https://www.ucdenver.edu/admissions/non-degree-admissions/>).

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## Program Expectations

To earn the certificate, students must complete a specific set of geospatial classes. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the GISci Certificate Program may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the GISci Certificate Coordinator. Please pay close attention to prerequisites for specific courses.

## Performance Expectations

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

## Procedure to request the issuing of GIS Certificate

When you have completed all the courses required for the Graduate or Undergraduate GISc Certificate with a grade of B- or above, send the following information to the GIS coordinators (**Rafael Moreno** ([rafael.moreno@ucdenver.edu](mailto:rafael.moreno@ucdenver.edu)) and **Peter Anthamatten** ([peter.anthamatten@ucdenver.edu](mailto:peter.anthamatten@ucdenver.edu))). Students must complete the certificate and submit a notification of completion to the GIS coordinator(s) before graduation.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their Geographic Information Science certificate advisor to confirm the best plans of study before finalizing them.

## Graduate Education Policies and Procedures apply to this program. Certificate Requirements

1. Students must complete a minimum of 18 credit hours.
2. Students must complete a minimum of 18 graduate (5000-level) or higher credit hours.
3. Students must earn a minimum grade of B- (2.7) in all courses applied to the certificate and must achieve a minimum cumulative certificate

GPA of 3.0. Courses taken using P+/P/F or S/U grading cannot apply to certificate requirements.

- Students must complete all coursework with CU Denver faculty.

## Certificate Restrictions, Allowances and Recommendations

- It is assumed that graduate students have some prior knowledge in basic mapping skills, therefore GEOG 2080 Introduction to Mapping and Map Analysis is not required. All core classes are required for completion of the GIS Certificate and are offered at least on a yearly basis. The statistics course requirement can be filled by enrolling in the GEOG 5050 Applied Spatial Statistics or one of several graduate level (5000 or above) classes offered by CU Denver and approved by the certificate coordinator.
- If you are currently a graduate student at CU Denver and also attended CU Denver as an undergraduate, you may apply only one three credit hour undergraduate course (4000 level) to the GISci Certificate.
- There is a prerequisite requirement of a basic statistics class taken at the undergraduate college level prior to taking any graduate level statistics class at CU Denver. Any additional two electives can be taken from the elective list.

Code	Title	Hours
<i>Complete the following required courses:</i>		
GEOG 5050	Applied Spatial Statistics	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5080	Introduction to GIS	3
GEOG 5081	Cartography	3
Or an equivalent course approved by the GISci graduate certificate advisor.		
<i>Complete two of the following elective courses:<sup>1</sup></i>		6
GEOG 5070	Remote Sensing II: Advanced Remote Sensing	
GEOG 5085	GIS Applications for the Urban Environment	
GEOG 5086	FOSS4G Systems Integration	
GEOG 5090	Environmental Modeling with Geographic Information Systems	
GEOG 5091	Open Source Software for Geospatial Applications	
GEOG 5092	GIS Programming and Automation	
GEOG 5095	Deploying GIS Functionality on the Web	
GEOG 5235	GIS Applications in the Health Sciences	
CVEN 5382	Geospatial Data Development	
CVEN 5385	GIS Relational Database Systems	
<b>Total Hours</b>		<b>18</b>

<sup>1</sup> One of these courses may be substituted with an elective approved by the GISci Certificate Coordinator

To learn more about the Student Learning Outcomes for this program, please visit our website ([https://clas.ucdenver.edu/ges/programs/certificates/gis-certificate/#learning\\_outcomes-280](https://clas.ucdenver.edu/ges/programs/certificates/gis-certificate/#learning_outcomes-280)).