

SPATIAL DATA SCIENCE GRADUATE CREDIT CERTIFICATE PROGRAM

Person-in-Charge	Anthony C. Robinson
Program Code	SDS
Campus(es)	World Campus

The Certificate in Spatial Data Science prepares students who have prior experience with the application of Geographic Information Systems (GIS) to research, design, and create novel analytical and visualization solutions to complex problems that intersect people and the environment. The program engages key theories, emerging research, and contemporary spatial analysis techniques so that students can develop new spatial data science software, analytical methods, and cartographic products to visualize and communicate analytical results.

Effective Semester: Summer 2024

Expiration Semester: Summer 2029

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (<https://gradschool.psu.edu/graduate-admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>). International applicants may be required to satisfy an English proficiency requirement; see GCAC-305 Admission Requirements for International Students (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-305-admission-requirements-international-students/>) for more information.

Intermediate-level experience with professional applications of geographic information systems is expected as pre-requisite knowledge. Coursework to establish that pre-requisite knowledge is available through related coursework and credentials offered in Geography, including its Postbaccalaureate Certificate in GIS program.

Certificate Requirements

Requirements listed here are in addition to requirements listed in Graduate Council policy GCAC-212 Postbaccalaureate Credit Certificate Programs (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/gcac-212-postbaccalaureate-credit-certificate-programs/>).

Students earn the certificate by completing five courses – three required and two electives. Students who successfully complete the program earn 15 academic credits.

Students admitted to the Department of Geography's Master of Spatial Data Science or Master of Geographic Information Systems degree programs may count up to 15 credits of certificate program courses toward their degree, subject to restrictions outlined in GCAC-309 Transfer Credit (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-309-transfer-credit/>). Certificate students who wish to have certificate courses applied towards a graduate degree must apply and be admitted to that degree program. Admission to a Master's degree program is a separate step and is not guaranteed.

Code	Title	Credits
Required Courses		
GEOG 485	GIS Programming and Software Development	3
GEOG 486	Cartography and Visualization	3
GEOG 586	Geographical Information Analysis	3
Electives		
Select 6 credits from the following:		6
GEOG 580	GEOVISUAL ANALYTICS	
GEOG 581	Spatial Data Science Ethics	
GEOG 583	Geospatial System Analysis and Design	
GEOG 585	Open Web Mapping	
GEOG 588	Analytical Approaches in Spatial Data Science	
GEOG 589	Emerging Trends in Remote Sensing	
Total Credits		15

Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Learning Outcomes

- KNOW:** Graduates will be able to characterize the state of the art in spatial data science methodologies and technologies.
- APPLY/CREATE:** Graduates will be able to create new analytical and visualization solutions to complex spatial data science problems that intersect people and the environment.
- COMMUNICATE:** Graduates will demonstrate effective scientific writing, presentation, and cartographic communication skills.
- THINK:** Graduates will be able to explain and contextualize the distinguishing characteristics of spatial data sources, spatial analysis methods, and geographic visualizations.
- PROFESSIONAL PRACTICE:** Graduates will be able to evaluate spatial data science problems to address ethical and professional challenges.

Contact

Campus	World Campus
Graduate Program Head	Anthony C Robinson
Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)	Anthony C Robinson
Program Contact	Suzy Hartz svh6185@psu.edu (814) 863-1590
Program Website	View (https://www.worldcampus.psu.edu/degrees-and-certificates/penn-state-online-geospatial-intelligence-analytics-graduate-certificate/)