

# PLANNING AND DESIGN TECHNOLOGIES, GRADUATE/PROFESSIONAL CERTIFICATE

Contemporary advances in geospatial, information, and sensing technologies are changing the way we approach and solve planning and design problems. Employers are eager to incorporate innovative digital tools and applications that streamline measurement and analyses, enhance communication, and facilitate stakeholder engagement. Essential skills gained with this certificate will include the application of geographic information systems (GIS), remote sensing, virtual reality, building information modeling (BIM), and drones (UAS). Importantly, these applications will be enhanced by coursework in quantitative analysis and scripting to automate processes and enable evidence-based decision-making. This exciting addition to your graduate studies provides opportunities to explore increasingly in-demand technologies.

## ADVISING

We encourage you to reach out to Amy Rivera, Graduate Advisor, if you're interested in learning more about the Certificate or would like guidance as a current Certificate student. You can make an appointment via Starfish (<https://wisc.starfishsolutions.com/starfish-ops/instructor/serviceCatalog.html?tenantId=9315#/connection/113689/schedule>) or email ([amy.rivera@wisc.edu](mailto:amy.rivera@wisc.edu))

## ADMISSIONS

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The Certificate in Planning and Design Technologies welcomes applications from students in any graduate or professional degree program at UW-Madison.

### HOW TO APPLY

To declare the certificate, students must complete the online application form (<https://arcg.is/OKavve/>) which includes the following elements:

- Information on prior educational attainment
- Information on degree program being pursued
- A brief statement of interest in the program

All Graduate School students must utilize the Graduate Student Portal in MyUW to add, change, or discontinue any graduate/professional certificate. To add the certificate you must log in to MyUW, click on Graduate Student Portal, and then click on Add/Change Programs. Select the information for the Certificate in Planning and Design Technologies. The Graduate Coordinator and Program Administrator will review the online application and approve the addition if appropriate.

## DEADLINES

Applications may be submitted at any time, but applicants are encouraged to apply before the end of their first year in graduate school to ensure timely completion of certificate requirements. Students may take courses that meet certificate requirements prior to completing their application.

## REQUIREMENTS

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- Total credits required: 12
- Include coursework from Introductory and Applications category (at least 6 credits) and from Quantitative and Scripting category (at least 6 credits)
- Complete at least 6 credits from the Introductory and Applications category and at least 6 credits from the Quantitative and Scripting category.
- At least 6 credits must be graduate-level coursework (i.e., courses numbered 700 or above, or 300 or above with the Grad 50% attribute)
- All courses must be taken for a letter grade (no pass/fail courses) and a B or better must be earned in order for the course to count towards the certificate requirements.

Code	Title	Credits
<b>Introductory and Applications</b>		
CIV ENGR 392	Building Information Modeling (BIM)	3
DS/COMP SCI 579	Virtual Reality	3
ENVIR ST/ F&W ECOL/G L E/ GEOG/GEOSCI/ LAND ARC 371	Introduction to Environmental Remote Sensing	3
GEOG 370	Introduction to Cartography	4
GEOG/CIV ENGR/ ENVIR ST 377	An Introduction to Geographic Information Systems	4
GEOG 379	Geospatial Technologies: Drones, Sensors, and Applications	3
GEOG/ENVIR ST/ LAND ARC/ URB R PL 532	Applications of Geographic Information Systems in Planning	3
GEOG 578	GIS Applications	4
GEOG 579	GIS and Spatial Analysis	4
LAND ARC 311	Introduction to Design Frameworks and Spatial Technologies	2
LAND ARC 511	Geodesign Methods and Applications	3
LAND ARC/ CIV ENGR/ ENVIR ST 556	Remote Sensing Digital Image Processing	3
LAND ARC/ ENVIR ST/ SOIL SCI 695	Applications of Geographic Information Systems in Natural Resources	3
URB R PL 841	Urban Functions, Spatial Organization and Environmental Form (Will be renamed and numbered 533)	2-3

<b>Quantitative and Scripting</b>		<b>At least 6 credits</b>
COMP SCI 320	Data Science Programming II	4
GEOG 378	Introduction to Geocomputing	4
GEOG 560	Advanced Quantitative Methods	3
GEOG 573	Advanced Geocomputing and Geospatial Big Data Analytics	4
GEOG 574	Geospatial Database Design and Development	4
GEOG 575	Interactive Cartography & Geovisualization	4
GEOG 576	Geospatial Web and Mobile Programming	4
SOIL SCI 585	Using R for Soil and Environmental Sciences	3
STAT 303	R for Statistics I	1
STAT 304	R for Statistics II	1
STAT 305	R for Statistics III	1

## LEARNING OUTCOMES

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1. Understand and evaluate digital technologies to collect and manage data.
2. Demonstrate an introductory or intermediate proficiency in computer scripting.
3. Analyze and visualize geospatial data using geographic information systems or R statistical language.
4. Evaluate digital technologies as they apply to planning and design.