GEOSPATIAL TECHNOLOGIES CERTIFICATE

Program Website: https://www.towson.edu/cla/departments/geography/graduate/geospatial-technologies-certificate/

Program Director: Charles Schmitz
Phone: 410-704-2966
Email: cschmitz@towson.edu

Requirements

Geospatial technologies are fast developing, cutting edge technologies in high demand in the private sector, government, non-profit organizations, and research institutions of all types. This graduate level certificate will enable students to apply advanced GIS methods to spatial problems, analyze remote sensing data to solve environmental and landscape challenges, conduct spatial analysis to identify and interpret complex spatial patterns, and produce cartographic representations that communicate geographic information clearly.

Code	Title	Units
Required Courses		
GEOG 504	INTRODUCTION TO REMOTE SENSING AND PHOTOGRAMMETRY	3
GEOG 518	GEOGRAPHIC INFORMATION SYSTEMS	3
Required GIS Course (choose one):		**3**
GEOG 523	GIS APPLICATIONS	
GEOG 665	ADVANCED TECHNIQUES IN GIS	
Elective (choose one):		**3**
GEOG 505	CARTOGRAPHY AND GRAPHICS I [1]	
GEOG 608	APPLICATION OF GIS IN EMERGENCY MANAGEMENT	
GEOG 626	GIS DATABASE DESIGN	
GEOG 631	ADVANCED REMOTE SENSING: DIGITAL IMAGE PROCESSING AND ANALYSIS	
GEOG 664	PYTHON SCRIPTING FOR ARCGIS	
GEOG 696	INDEPENDENT STUDY IN GEOGRAPHY [2]	
Total Units		**12**

[1] A maximum of three 500-level courses may be counted towards the certificate. Students that have completed or plan to enroll in GEOG 523 should complete one of the 600-level elective course options instead of GEOG 505.

[2] Must be a topic related to Geospatial Technologies. Maximum of 3 units.

Learning Outcomes

1. Critically evaluate and apply advanced GIS methodologies to complex real-world problems, demonstrating proficiency in the integration of theory and practice across different spatial contexts (665 or 523).
2. Analyze and synthesize remote sensing data and techniques to devise innovative solutions for complex environmental and landscape challenges, assessing the implications of different approaches (504).
3. Conduct advanced spatial analysis using GIS to identify and interpret complex spatial patterns and relationships, integrating interdisciplinary perspectives to support informed decision-making (665 or 523).
4. Design and produce sophisticated cartographic representations that communicate geographic information clearly and persuasively, employing advanced visualization techniques and critically assessing the impact of design choices on audience interpretation (504).