Geospatial Information Science and Technology (GIST) Graduate Certificate Program

Director:
Dr. Deana Pennington
Associate Professor of Geological Sciences
The University of Texas at El Paso
Office: Geology 305C
Phone: (915) 747-5867
Email: ddpennington@utep.edu

Description of the Program: The GIST Graduate Certificate program will provide training for students to gain knowledge, skills, and capabilities necessary to employ GIST in their field of expertise. GIST is a collective term used to describe geographic information systems, remote sensing, global positioning, internet mapping, and other approaches for collecting, managing, analyzing, and visualizing data with spatial attributes. The program combines training in core GIST concepts, spatial reasoning, and exposure to how GIST is being applied in different disciplines. Students will become experienced using the leading industry system ESRI's ArcGIS, as well as other proprietary and open source systems such as ENVI and QGIS. This program is appropriate for students from many disciplines, and is especially relevant to students from geology, environmental science, social science, intelligence and national security studies, and electrical engineering.

Requirements for admission: Admission to the program requires admission to the graduate school. There are no prerequisite courses, although knowledge of some programming, statistics, and/or mathematics is helpful.

Courses: The program requires completion of 5 courses for a total of 15 credits. Two courses are required: GEOL 5321 Introduction to Geospatial Information Science, and GEOL 5322 Advanced Geospatial Information Science and Technology. GIST 5321 may be waived if a student has taken any introductory GIST course from an accredited institution or has on-the-job training, with approved substitution of an additional GIST elective to bring GIST graduate coursework to a total of 15 credit hours. One elective must be selected from technical core courses, including GEOP 5335 Introduction to Remote Sensing, GEOP 5336 Digital Image Processing, EE 5372 Image Processing, EE 5373 Introduction to Remote Sensing Systems, EE 5360 Computer Vision, GEOL 5362 Directed Study using ESRI online (or other) training modules, SOCI 5381 Cartography and Visualization, and GEOL 5315 Geocomputation. One elective must be chosen from courses focused on disciplinary applications of GIST developed in departments across campus, including GEOL 5323 Spatial Analysis in Earth and Environmental Sciences, BIOL 5301 Ecological Modeling with Rasters, INSS 5355 Geospatial Intelligence, GEOL 5303 Computer Applications in Earth Sciences, GEOL 5362 Directed Study using application-focused ESRI online (or other) training modules, and other courses under development that are approved by the program. The final elective may be taken from either the technical core or the applied courses. The program is intentionally flexible to meet the needs of students from any college or department, or students who have relevant work experience.

Course No.	Title	Pre-Requisites

GEOL 5321	Introduction to GIST	
GEOL 5322	Advanced GIST	GEOL 5321
GEOP 5335	Introduction to Remote Sensing	
GEOP 5336	Digital Image Processing	GEOP 4336 or better
EE 5372	Image Processing	EE 5371
EE 5373	Introduction to Imaging Principles and Systems	
EE 5360	Computer Vision	Restricted to Majors of CEPH, EE, EECE
GEOL 5362	Directed Study in Geology or any STEM discipline	
SOCI 5381	Cartography and Visualization	
GEOL 5324	Geocomputation	
GEOL 5323	Spatial Analysis of Earth/Environment Science	
BIOL 5301	Selected Advanced Topics in Biological Sciences: Ecological Modeling with Rasters	
INSS 5355	Geospatial Intelligence	
GEOL 5303	Computer Applications in the Earth Sciences	GEOL 5401
GEOL 5362	Directed Study in Geology or any STEM discipline	
EE 5371	Digital Signal Processing	EE 4383

Commented [U1]: I removed the undergrad courses you listed. While I know the grad school allows 6 hours of UG to be taken for graduate credit, all of these have a graduate version. They should be taking the graduate versions, not the UG versions, right?