

Got GIS Skills? GIS and the Workforce Ready Student

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Introduction

According to the National Geospatial Advisory Committee, “the United States is a world leader in geospatial technology and research, an area that represents a multi-billion-dollar sector of the U.S. economy. This high-growth, high-technology industry acquires, manages, analyzes, integrates, maps, distributes, and uses geographic, temporal, and spatially based information and knowledge to fuel major sectors of the U.S. economy. The industry includes research, technology development, education, and applications to address the planning, decision-making, and operational needs of people and organizations of all types. But the geospatial industry faces a serious workforce development challenge: a shortage of qualified and skilled workers” (Federal Geographic Data Committee, 2016).

History

In 2012, Farmingdale State College History, Politics, and Geography department faculty member Robert A. Saunders proposed a professional B.S. degree program in geographic information systems. During the development and revision process and after informal consultation with local industry, high schools, and nearby community colleges, we transformed the initial idea for the program from a conventional geography program that would include geographic information system concepts to an applied degree in the spatial science of geography that aims to generate workforce ready graduates. The program was guided by Emily A. Fogarty through approval by the State of New York in early 2018. The first course offerings under the GIS course code began in Spring 2019 and admission of the first program students will begin in Fall 2019.

Geographic Information Systems, B.S. Exploring the Science of Where

In order to meet the needs of college graduates and the demands of local businesses, government agencies, K12 institutions and other industries on Long Island and the Greater New York Metropolitan Area, SUNY Farmingdale department of History, Politics and Geography is now offering a **Bachelor of Science (B.S.) degree in Geographic Information Systems (GIS)**.

GIS Program Overview

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Lower Division	
Course Title	Credits
Other General Education Courses	21
MTH110 - Statistics (GE)	3
EGL 101 - Composition I (GE)	3
EGL 102 - Composition II	3
Required Lower Division Courses	
GEO 110 - Maps and Map Analysis (GE)	3
GIS 231 Geospatial Research Methods	3
GEO 211 The World and Its Peoples (GE)	3
GIS 222 Geovisualization I	4
GEO 201 Physical Geography OR GEO 222 Human Geography	3
Liberal Arts Technical Electives	6
Liberal Arts & Science Electives	6
Free Elective	6
Total Lower Division credits	64

Upper Division	
Course Title	Credits
GIS 321 Geovisualization II	3
GIS 331 Spatial Analysis I	3
GIS 341 Geoprocessing I	3
GIS 342 Geodatabase Management	3
GIS 491 (Senior Seminar) or GIS 492 (Internship)	3
Technical Electives 300-400 Level	21
Free Electives 300-400 Level	12
300-400 Liberal Arts & Science Electives	9
Total Upper Division Credits	57
Total Credits	121

This is an applied degree in the spatial science of geography that aims to generate workforce-ready graduates who are well trained in the technology, theory, and application of geographic information systems. At the completion of the program graduates will be able to: 1) Utilize the scientific method and various informational and analytical tools for solving problems related to human and physical geography. 2) Apply understanding of the importance of space and place in key issues facing contemporary society, combined with the ability to use data to solve pressing problems in the environmental sciences, sales-force management, public health, public policy, etc., and 3) integrate spatial analysis into interdisciplinary research problems.

Geospatial Education Initiatives

“ConnectED empowers teachers with the best technology and the training to make the most of it, and empowers students through individualized learning and rich, digital content” (ConnectED Initiative, 2016). ESRI, the leading developer of geographic information system software, has offered **free ArcGIS Online and ArcGIS Desktop access to all K-12 schools in the United States** (AAG, 2016). The **GeoMentors Program** is working to enhance GIS and geographic learning in U.S. K-12 schools through the introduction of ArcGIS Online into classrooms across the country. The American Association of Geographers, as a professional association with funding support from the **Geography Education National Implementation Project (GENIP)**, has developed a proposal for a new Advanced Placement course in Geographic Information Science and Technology (AP GIS&T). **AP GIS&T**, “is designed to introduce high school students to the fundamentals of geographic information science and applications of powerful geospatial technologies for spatial analysis and problem solving” (Fitzpatrick, 2016).



Future Work

- Focus on student enrollment into GIS degree.
- Provide professional development opportunities for K12 teachers to learn the basic applications of geospatial technologies.
- Seek out local/regional partners in need of GIS products for student applied learning opportunities.
- Offer micro-credentialing courses that cover use of geospatial technologies and teach concepts related to quantitative reasoning and spatial thinking.
- Create one year all online GIS certificate.
- Work toward offering all core GIS program courses online in addition to in-person.

References

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