

Geospatial Information Science and Technology
Associate of Applied Science (AAS) degree

BACKGROUND

We are pleased to present the Geospatial Information Science and Technology (GIST) AAS curriculum for your review and approval.

The GIST program will prepare graduates to work in a variety of industries that rely on data driven decision-making. Approximately 80% of all data have a spatial or location-based component. The geospatial industry and market for it continue to expand at a phenomenal rate. GIST-related jobs are available in a number of industries and are advertised as: mapping technician, photogrammetrist, cartographer, programmer, data analyst, computer systems analyst, and database administrator.

Trained geospatial technicians have the strongest job outlook, especially with government, business, local municipalities, real estate developers, utilities, and environmental consulting. There will also be an increase in job opportunities to apply GIS skills and technologies in areas such as emergency assistance and other non-traditional areas. The latest Department of Labor statistics show more than 850,000 current geospatial workers with an additional 350,000 needed by 2018.

AAS GIST graduates would be eligible for employment in a variety of industries including but not limited to: business (real estate, retail, facilities management, insurance), defense and intelligence, health and human services (public health, hospitals, managed care), governments (federal, state, local, civil engineering, land administration, public works, surveying, urban planning), public safety (fire and rescue, homeland security, law enforcement, wildland fire management, disaster management), transportation (aviation, highway, public transportation, railroads), utilities (electric telecommunication, gas, water/wastewater), natural resources (agriculture, forestry, mining, petroleum, water resources).

The Bureau of Labor Statistics also cites median annual wages of mapping technicians (an example of a more common job title) as \$35,120 in May 2008. The middle 50 percent earned between \$27,370 and \$45,860. The lowest 10 percent earned less than \$21,680, and the highest 10 percent earned more than \$58,030. Median annual wages of surveying and mapping technicians employed in architectural, engineering, and related services were \$33,220 in May 2008, while those employed by local governments had median annual wages of \$40,510.

Learning Outcomes

Students who successfully complete this program will:

- Design or coordinate the development of integrated Geographic Information Systems (GIS) spatial or non-spatial databases.
- Design or prepare graphic representations of Geographic Information Systems (GIS) data using GIS hardware or software applications.
- Enter data into Geographic Information Systems (GIS) databases using techniques such as coordinate geometry, keyboard entry of tabular data, manual digitizing of

maps, scanning or automatic conversion to vectors, and conversion of other sources of digital data.

- Maintain or modify existing Geographic Information Systems (GIS) databases.
- Perform geospatial data building, modeling, or analysis using advanced spatial analysis, data manipulation, or cartography software.
- Analyze Geographic Information Systems (GIS) data to identify spatial relationships or display results of analyses using maps, graphs, or tabular data.
- Interpret aerial or ortho photographs.
- Review existing or incoming data for currency, accuracy, usefulness, quality, or completeness of documentation.

Program Development/Budget Information

The GIST program will be housed in the Social Science Department and funds within the Social Science Department budgets have been identified to support instruction needs.

This GIST program is technology-dependent, needing up-to date-computers, printers and data collection units (GPS). In addition there are annual software costs and occasional updates. Currently the GIST classes are being offered in a general purpose lab. NSF-ATE funds have covered the initial equipment needs: dual monitors, increased in RAM, GPS units, software, plotter and printers, and paper and ink cartridges. Students taking these classes will pay a technology fee of \$35 per class. These fees will be used to maintain the GIST-specific equipment and software. In addition Carl Perkins funds are available to support career technical program such as this. In 2011 Perkins funds were awarded to update a class set of GPS units. Additionally, most instructional technical equipment is maintained on repair schedules determined by the IT division

CONTACT: Lynn Songer, Faculty
463-5203

Two-Year Career Technical Program

1. GIS 180 (GEOG 180) Digital Earth (4 credits)
2. GIS 245 Maps and Spatial Information (4 credits)
3. GIS 246 Introduction to GIS (4 credits)
4. GIS 249 Raster Analysis and Remote Sensing (4 credits)
5. GIS 260 Application in GIS - Capstone (4 credits)
6. GIS 280 Cooperative Education (3 credits)

GIS Electives – Choose 12 Credits

7. GIS 250 Cartographic Design (4 credits)
8. GIS 251 GIS for Water Technicians (2 credits)
9. GIS 252 GIS Water Resources (2 credits)
10. GIS 253 Emerging Technologies GIS (4 credits)
11. GIS 254 Spatial Data and Scripting (4 credits) [prerequisite CIS 133P]
12. GIS 298 Independent Study (credits vary)
13. CIS 247 Information Analysis and Visualization (4 credits)

Sample GIST Curriculum

Term 1 - Fall 2012

	Credits
GIS 180 Digital Earth	4
CIS 125D Software Tools 1: Databases	4
BT123 MS EXCEL for Business	4
WR 121 Introduction to Academic Writing	4
Total	16

Term 2 - Winter 2013

GIS 245 Maps and Spatial Information	4
GEOG 142 Introduction to Human Geography	4
WR 227 Technical Writing	4
DRF167 CAD 1.....	4
Total	16

Term 3 - Spring 2013

GIS 246 Introduction to GIS	4
SP 111 Oral Communication	4
GEOG141 Natural Environment	4
HE 255 Global Health (or Option HE222)	4
HE 222 Consumer Health (or Option HE255)	4
Total	16

Term 4 – Fall 2013

MTH 95 Intermediate Algebra	5
CS 133P Programming with Python	4
GIS 249 Raster Analysis and Remote Sensing	4
Arts and Letters <i>Elective</i>	4
Total	17

Term 5 – Winter 2014

GIS 254 Spatial Data and Scripting	4
CIS 247 Information Analysis and Visualization	4
DRF168 CAD 2	4
MTH 97 Geometry	5
Total	17

Term 6 – Spring 2014

GIS 260 Applications in GIS – Capstone	4
MTH 111 MTH 111	5
Arts and Letters Elective	4
GIS 250 Cartographic Design.....	4
Total	17

Term 7 - Summer 2014

GIS 280 GIS Cooperative Education	3
Total Program Credits	102