

# GEOGRAPHIC

## Information Systems



**Geographic Information Systems is a powerful computer-based tool that makes use of spatial and statistical methods to analyze geographic information. GIS creates maps and graphics from informational databases linked to a location. Today, GIS technology impacts nearly every aspect of daily life and is integral to the decision-making processes of business, industry, and government.**

**Bismarck State College created the GIS program to satisfy local and state demand for skilled technicians in a variety of fields and to provide students with fundamental skills for jobs that offer good pay and potential for advancement. Employment opportunities abound, including careers in energy production/distribution, agriculture, science, transportation, engineering, wildlife/natural resources, law enforcement, emergency management, social service, archeology, environmental monitoring, city planning, marketing, telecommunications, repair service, retail business, and more.**

BSC is a leader in GIS education with three program options to give students the greatest flexibility for completion. The Associate in Applied Science degree and the Certificate are designed to prepare students for entry-level employment in the many businesses and agencies that use GIS technology. The Certificate of Completion builds GIS proficiency to complement another career field.

Basic program objectives include knowledge and skill in computer operations and mapping structures. Students will learn technical concepts such as cartography, scale, data structure, metadata, and database management, and take courses in statistics, GPS, physical geography, visual basic programming language, remote sensing, project development and management, and other GIS applications. The combination of traditional and online classes will provide many learning options for students.

### EMPLOYMENT

North Dakota's growth hinges on the availability of challenging and well-paying jobs and technologies that help businesses thrive. Geospatial technology provides good opportunities for graduates who wish to stay in North Dakota and work in a satisfying and appropriately compensated job. Students who add GIS training to their education will make themselves more marketable and give them an edge when entering the workforce.

GIS proficiency is one of the top 10 skills employers look for in job applicants today. Graduates with GIS skills are in demand to fill 75,000 jobs nationwide each year with the number of professionals using GIS growing 15 percent annually. This evolution places geospatial technology among the three most important emerging career fields, according to the U.S. Department of Labor.

### APTITUDE/PREPARATION

Students should enjoy working with people. GIS workers typically work on teams and need good communication and interpersonal skills. Other considerations are creative thinking and problem-solving skills, inquisitiveness, and aptitude for working with computers.

### GRADUATION

BSC graduation with the Associate in Applied Science degree requires 62 semester hours and cumulative grade point of 2.0. The two-year degree includes 15 general education credits and 47 credits of technical study in computer and geospatial technologies and geography.

The Program Certificate is a 34-credit program that emphasizes GIS applications and computer technology. Both prepare students with the knowledge and entry-level skills to enter the workforce as a GIS technician. The Certificate of Completion is 13 credits and offers proficiency in GIS as a supplement to another course of study in an associate degree or certificate program.

### FACULTY

For more information, contact Angie Milakovic, assistant professor of geographic information systems, 224-2448, or [Angela.Milakovic@bsc.nodak.edu](mailto:Angela.Milakovic@bsc.nodak.edu).

**HOW TO REACH US**

**BSC Web site:** bismarckstate.edu  
**Application information:** 1-800-445-5073 or  
 1-701-224-5429 or bismarckstate.edu/  
 prospectivestudents/application.asp  
**Financial Aid:** 1-701-224-5494 or  
 bismarckstate.edu/student/finaid  
**BSC Foundation Scholarships:** 1-701-224-2486 or  
 bismarckstate.edu/scholarships

**WHAT INDUSTRY AND GOVERNMENT LEADERS ARE SAYING**

“Adding GIS skills is one of the best moves you can make to increase your ability to get a good job. Just about anything you can imagine has a spatial component to it. Telecommunications/utilities, agriculture, mining, and transportation are just a few industries that need employees with GIS skills. Bismarck State College’s GIS program will help you develop the basic and advanced GIS skills that are in demand in today’s job market.”

*Ron Luethe, GIS Specialist  
 USDA-Natural Resources Conservation Service  
 Bismarck, ND*

“As a GIS provider and developer, AE2S supplies municipalities with a very powerful tool to help our clients manage their utilities, subdivisions, zoning, paving inventories, sign inventories, etc. Instead of searching tirelessly through file cabinets or desks for information, our clients find that they can have endless amounts of information right at their fingertips in one file. In today’s job market it is hard to find employees that are trained in the software and techniques utilized in assembling an organized GIS. BSC’s GIS program will help fill that need for employees with these specialized skills.”

*Todd Norton, PLS  
 Survey/CADD Manager  
 Advanced Engineering and  
 Environmental Services, Inc. (AE2S)*

**CURRICULUM**

**GIS TECHNICIAN ASSOCIATE IN APPLIED SCIENCE DEGREE**

**FRESHMAN YEAR**

<b>FALL SEMESTER</b>	<b>CREDITS</b>
College Composition (ENGL 110).....	3
Intro. to Computers (CSCI 101).....	3
College Algebra (MATH 103).....	4
Fundamentals of Geographic Information Systems (GIS 105).....	3
GIS in Science, Agriculture an Business (GIS 206).....	3
<b>Total credits</b> .....	<b>16</b>

**SPRING SEMESTER**

	<b>CREDITS</b>
Intro. to Professional Writing (ENGL 125).....	3
Microcomputer Database (CIS 104).....	3
Physical Geography (GEOG 121).....	3
Physical Geography Lab (GEOG 121L).....	1
Computer Aided Design I (CAD 211).....	3
GIS Applications (GIS 107).....	3
<b>Total credits</b> .....	<b>16</b>

**SOPHOMORE YEAR**

**FALL SEMESTER**

	<b>CREDITS</b>
Database Theory with SQL (CIS 204).....	3
Advanced GIS Applications (GIS 201).....	3
GPS, Photogrammetry and Remote Sensing (GIS 215).....	3
State and Local Government (POLS 116).....	3
Elements of Economics (ECON 105).....	3
<b>Total credits</b> .....	<b>15</b>

**SPRING SEMESTER**

	<b>CREDITS</b>
Elementary Statistics (MATH 210).....	3
Beginning Visual Basic (CSCI 122).....	3
GIS Project Development and Management (GIS 225).....	3
Cartographic Design and Analysis (GIS 235).....	3
Principles of Management (BADM 202).....	3
<b>Total credits</b> .....	<b>15</b>
<b>Associate in Applied Science Degree total credits</b> .....	<b>62</b>

**GIS TECHNICIAN CERTIFICATE PROGRAM**

**FALL SEMESTER**

	<b>CREDITS</b>
Fundamentals of Geographic Information Systems (GIS 105).....	3
GIS Applications (GIS 107).....	3
Computer Aided Design I (CAD 211).....	3
GIS in Science, Agriculture, and Business (GIS 206).....	3
GPS, Photogrammetry and Remote Sensing (GIS 215).....	3
<b>Total credits</b> .....	<b>15</b>

**SPRING SEMESTER**

	<b>CREDITS</b>
Advanced GIS Applications (GIS 201).....	3
Cartographic Design and Analysis (GIS 235).....	3
GIS Project Development and Management (GIS 225).....	3
State and Local Government (POLS 116).....	3
Microcomputer Database (CIS 104).....	3
Physical Geography (GEOG 121).....	3
Physical Geography Lab (GEOG 121L).....	1
<b>Total credits</b> .....	<b>19</b>
<b>Certificate total credits</b> .....	<b>34</b>

**GIS TECHNICIAN CERTIFICATE OF COMPLETION**

**FALL SEMESTER**

	<b>CREDITS</b>
Fundamentals of Geographic Information Systems (GIS 105).....	3
GIS Applications (GIS 107).....	3
<b>Total credits</b> .....	<b>6</b>

**SPRING SEMESTER**

	<b>CREDITS</b>
Physical Geography (GEOG 121).....	3
Physical Geography Lab (GEOG 121L).....	1
Advanced GIS Applications (GIS 201).....	3
<b>Total credits</b> .....	<b>7</b>
<b>Certificate of Completion total credits</b> .....	<b>13</b>