

# GEOGRAPHIC INFORMATION SYSTEMS - ONE-YEAR CERTIFICATE OF COMPLETION (CC1)

## Description

The Geographic Information Systems One-Year Certificate of Completion is designed for students who have or who are working on a two- or four-year degree and want to acquire specific geographic information systems (GIS) skills.

Geographic information systems are designed to work with data referenced by spatial or geographic coordinates. GIS is a database with capabilities for spatially referenced data, a set of operations for working with and analyzing the data, and a cartographic system for designing maps.

Graduates work in natural resources, government, planning, utilities, real estate, education, retail, businesses, banking, insurance, and web mapping. Careers typically include positions such as GIS technician, analyst, project manager, computer programmer, database administrator, systems administrator, cartographer, applications developer, and related managerial and administrative roles.

## Program Learning Outcomes

Upon successful completion of the program, students will be able to:

1. Apply foundational theories of geospatial science to real-world industry applications.
2. Use industry-standard GIS software proficiently.
3. Explain geospatial ideas and outcomes to stakeholders, including non-professionals.
4. Create procedures for using GIS and modeling data.
5. Use cartographic design principles to communicate effectively with maps.

## Entrance Requirements

### Academic Entrance Requirements

Recommended:

- Two-year, four-year, or graduate degree from accredited institution
- Completion of WR 065 Rhetoric and Critical Thinking II or minimum placement Wr/Comm Level 7
- MTH 060 Beginning Algebra or higher or minimum placement Math Level 10
- Completion of computer competency (either IC3 exam or CIS 120 Computer Concepts)

## Additional Program Costs (Beyond Standard Tuition/Fees and Textbooks)

### Material Costs

Required:

- Materials (USB drive, maps, assorted office supplies): \$100

Recommended:

- A desktop or laptop computer capable of running the GIS software\*: approximately \$1,200

\*Most courses use GIS software that is compatible only with Microsoft Windows, and there is no MacOS version. Contact program instructor for specifics.

## Course Requirements

| Course  | Title                                       | Credits      |
|---|---|--------------|
| <b>Core Courses</b>   |   |              |
| GEOG 101  | Introduction to Geospatial Science & GIS    | 4            |
| GEOG 211  | Cartography                                 | 4            |
| GEOG 265  | Geographic Information Systems              | 4            |
| GEOG 266  | ArcGIS                                      | 4            |
| GEOG 267  | Geodatabase Design                          | 4            |
| GEOG 273  | Spatial Data Collection                     | 4            |
| GEOG 275  | GIS Capstone                                | 4            |
| GEOG 285  | Data Conversion and Documentation           | 4            |
| GEOG 286  | Remote Sensing                              | 4            |
| GEOG 287  | Spatial Analysis                            | 4            |
| <b>Other Required Courses</b>                                     |   |              |
| Choose one course from the following:                             |   | 4            |
| MTH 102   | Applied Technical Mathematics               |              |
| MTH 105   | Math in Society                             |              |
| Or choose one course from the foundational requirements math list |   |              |
| Choose one course from the following:                             |   | 3-4          |
| BA 178  | Customer Service                            |              |
| BA 285  | Business Human Relations                    |              |
| COMM 115  | Introduction to Intercultural Communication |              |
| COMM 218  | Interpersonal Communication                 |              |
| COMM 219  | Small Group Communication                   |              |
| WR 121  | Academic Composition                        | 4            |
| <b>Total Credits</b>  |   | <b>51-52</b> |

## Advising Notes

Most GIS courses are offered once per year beginning in Fall term. Students may take an introductory GIS course (e.g., GEOG 101 Introduction to Geospatial Science & GIS or GEOG 265 Geographic Information Systems) or non-program support and/or selected GIS courses if they begin in Winter, Spring, or Summer term or if they need to build skills related to prerequisites. GIS courses are offered each term and must be taken together and sequentially. It is recommended that students avoid working more than 10 hours per week during any term due to heavy course load.

This one-year certificate is designed for students planning to enter their chosen career upon graduation. Often only selected credits are considered transferable to public or private baccalaureate institutions.

## Performance Standards

- Academic Requirements:
  - Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.
  - All courses in the program must be completed with a grade of C or higher.

## Sample Plan

### First Year

| <b>Fall</b>   |  | <b>Credits</b> |
|---|--|----------------|
| GEOG 101  | Introduction to Geospatial Science & GIS | 4              |
| GEOG 265  | Geographic Information Systems           | 4              |
| GEOG 266  | ArcGIS                                   | 4              |
| GEOG 273  | Spatial Data Collection                  | 4              |
| Choose one course from the following:                           |  | 4              |
| MTH 102   | Applied Technical Mathematics            |                |
| MTH 105   | Math in Society                          |                |
| Or choose a course from the foundational requirements math list |  |                |
| <b>Credits</b>  |  | <b>20</b>      |

### Winter

|                |                                   |           |
|----------------|-----------------------------------|-----------|
| GEOG 211       | Cartography                       | 4         |
| GEOG 285       | Data Conversion and Documentation | 4         |
| GEOG 287       | Spatial Analysis                  | 4         |
| WR 121         | Academic Composition              | 4         |
| <b>Credits</b> |                                   | <b>16</b> |

### Spring

|                                       |   |              |
|---------------------------------------|---|--------------|
| GEOG 267                              | Geodatabase Design                          | 4            |
| GEOG 275                              | GIS Capstone                                | 4            |
| GEOG 286                              | Remote Sensing                              | 4            |
| Choose one course from the following: |   | 3-4          |
| BA 178                                | Customer Service                            |              |
| BA 285                                | Business Human Relations                    |              |
| COMM 115                              | Introduction to Intercultural Communication |              |
| COMM 218                              | Interpersonal Communication                 |              |
| COMM 219                              | Small Group Communication                   |              |
| <b>Credits</b>                        |   | <b>15-16</b> |
| <b>Total Credits</b>                  |   | <b>51-52</b> |