

# Geographic Information Systems

C. I. D. T.  
Computer Information  
and Design Technologies

## ASSOCIATE OF APPLIED SCIENCE DEGREE Geographic Information Systems

Course	Credit Hours	Contact Hours	Required Prerequisite Or *Co-requisite
<b>1st Semester</b>			
COSC 1301 - Microcomputer Applications	3	4	Prerequisite: 0370. The student must earn a grade of "C" or higher in prerequisite courses. Credit by exam.
CRTG 1402 - Understanding Geographic Information Systems	4	6	CRTG 1402
ENGL 1301 - Composition 1	3	3	(*)
Science - Elective	4	6	Check prerequisite of the course in the course description section
<b>2nd Semester</b>			
ENGL 1302 or 2311 - Composition 2 or Tech. Writing	3	3	ENGL 1301, grade of C or better
CRTG 1444 - Using Geographic Information Systems	4	6	CRTG 1402
COSC 1336 - Intro to Programming	3	4	None
ITSE 1346 - Database Theory and Design	3	4	None
<b>3rd Semester</b>			
MATH 1314 - College Algebra	3	3	MATH 0320 grade "C" or better COM Math Placement Test or 270 or higher on the Math portion of the THEA
CRTG 2402 - GIS Design with Raster Analysis	4	6	None
CRTG 2404 - GIS Design with Vector Analysis	4	6	None
CRTG 2311 - Geographic Information Systems Applications	3	6	None
<b>4th Semester</b>			
CRTG 2401 - Data Acquisition and Analysis	4	6	None
CRTG 2335 - Programming for Geographic Information Systems	3	6	None
Math 1316 - Trigonometry	3	3	Math 1316
SPCH 1315 - Public Speaking	3	3	(*)
<b>5th Semester</b>			
SOCI 2319 - Multi-cultural Studies	3	3	None
HUMN/FIN - Humanities/Fine Arts Elective	3	3	Check prerequisite of the course in the course description section
CRTG 1491 - Special Topics in Cartography	4	6	None
CRTG 2380 - Cooperative Education Cartography	3	4	None
<b>PROGRAM TOTAL:</b>	<b>67</b>		

(\*) CPT Sentence Skills 80 or better plus Essay 5 or higher & CPT Reading 78 or higher; or Essay 6 & CPT Reading 78 or higher; or credit for English 0360 & CPT Reading 78 or higher. note: Essay 6 with below 80 Sentence Skills-recommend English 0360.

The Associate of Applied Science degree in Geographic Information Systems begins by offering broad based skills training provided by the general education curriculum. Math, science, public speaking and multicultural topics are also addressed. Computer skills, database skills, and programming skills are also taught. GIS skills including programming, analysis, data acquisition and workplace applications prepare students to be immediately productive in this dynamic and fast growing field.

See your counselor or the instructor in this program for more information.

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# ASSOCIATE OF APPLIED SCIENCE DEGREE

## Geographic Information Systems

### CORE COURSE DESCRIPTIONS

#### **CRTG 1402 – Understanding Geographic Information Systems**

This is an introductory course covering the theory and application of geographic information science (GIS). The course includes an overview of the general principles of GIS and practical experience in its use.

**CRTG 1444 – Using Geographic Information Systems.** This course covers the theory and application of Geographic Information Science (GIS) and the relationship between the principles of cartography, geography and their use in geospatial analysis. Emphasis is on global reference systems (GPS technology). This course will use satellite and GPS technology for measurement and navigation.

Field Data collection required for this course.

Prerequisites: CRTG 1402, work experience or consent of the instructor.

**CRTG 2402 – GIS Design with Raster Analysis.** This course is designed to familiarize the student with raster/remote sensing principles, technologies and applications. Students will learn how to process raster imagery into useful information to be used in a GIS. The student will also be instructed on geo-referencing and image classification. This class will utilize lecture, demonstration and hands-on training. Emphasis is placed on a final project in which students will present a project to the class that demonstrates raster and remote sensing techniques.

#### **CRTG 2311 – Geographic Information Systems**

**Applications.** This course will teach the application of GIS technology to real-world workplace applications from public and private sectors. Completion of Global Positioning System (GPS) field work is required for lab exercise.

**CRTG 2404 – GIS Design with Vector Analysis.** The introductory course in GIS answered the basic question "What is GIS"? This continuation of that class will take the basics learned and begin to explore the question "Why use GIS"? Students will learn to use GIS as a problem solving tool from the first stages of designing an analysis project, through the data collection and manipulation phase to the final phase of presenting the project. Emphasis is placed on making the final project both thorough and presented in a good, graphic manner.

**CRTG 2401 – Data Acquisition and Analysis in Geographic Information Systems.** Students in this course study the management of Geospatial information, system life cycles, and costs and benefits. Topics include demographic management and institutional issues such as data providers, data management, combination of attribute and graphical data, information, storage and access. Topics also include Texas and national standards for spatial data and applications of Geospatial modeling and analysis. During this course, students will utilize industry standard software.

#### **CRTG 2335 – Programming for Geographic Information Systems .**

This course focuses on the use of Visual Basic to customize and expand the capability of GIS applications. Instruction will include object-oriented and component programming. Students will customize the GIS Graphical User Interface (GUI). Students will learn to interact with users via GUI dialogs. Students will access GIS components and data within their created tools or program/s. Students will create and/or edit GIS data with created program/s. Students will learn to reduce convoluted routines programmatically.

#### **CRTG 1491 – Special Topics in Cartography.**

Topics address recently identified current events, skills, knowledge, attitudes, and behavior pertinent to the technology or occupation and relevant to the professional development of the student. Selected topics for this class may include but are not limited to:

- Advanced Route Analysis and Logistics;
- Expanding the User Interfaces in ArcMap, ArcPad and ArcIMS;
- Using Survey Analyst to facilitate the recording of plat information;
- Spatial Databases, ARCSDE and Advanced SQL with Microsoft Server.

**CRTG 2380 – Cooperative Education - Cartography.** Co-op comprises Career related activities encountered in the student's area of specialization, offered through an individualized agreement among the college, employer and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. This course includes a lecture component.

