

Houston Community College System
Department of Geology & Geographic Information Science
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ASSOCIATE DEGREE IN GEOGRAPHIC INFORMATION SCIENCE

Description of Associate Degree (AAS) Program:

The Associate Degree requires 67 credit hours with 27 hours in GIS/GPS areas of study and the balance in general education and technical support courses. On successful completion of the requirements the student will be awarded an Associate in Applied Science Degree. In addition the student could qualify to move directly to a Bachelor of Science at a participating four-Year college as part of a 2+2 partnership (currently with Texas A&M at Corpus Christi).

. GIS/GPS Course Listing:	CREDITS
CRTG 1411 Introduction to GIS& GPS	4
CRTG 1401 Cartography and Geography in GIS and GPS	4
CRTG 2411 Workplace GIS	4
CRTG 2401 Data Acquisition and Analysis in GIS	4
CRTG 1421 Introduction to Raster-based GIS	4
CRTG 2364 Practicum (or Field Experience)-Cartography	3
CRTG 2380 Cooperative Education -Cartography	3
CRTG 1491 Special Topics in GIS	4
TOTAL CREDITS	26
Other Core Courses	
ENGL 1301 Composition I	3
GEOL 1403 Physical Geology	4
MATH 1314 College Algebra	3
MATH 1316 Plane Trigonometry	3
Elective Social Science Elective	3
TOTAL CREDITS	17
Other Technical Courses	
TECC 2322 Technical Writing I	3
CSCI 1338 Windows Application	3
CSCI 1343 Programming Techniques I	3
CSCI 1347 Programming Techniques II	3
CSCI 2332 Database Mgmt. Systems	3
DFTG 1305 Technical Drafting I	4
ELECTIVE Program Related Elective	3
DFTG 1309 Basic CAD	3
TOTAL CREDITS	25

TECHNICIAN and ANALYST CERTIFICATE IN GEOGRAPHIC INFORMATION SCIENCE

Description of Certificate Programs:

The Geographic Information Science Technician Certificate and Geographic Information Science Analyst Certificates are designed to develop competent support technicians for employment in the GIS/GPS fields and associated areas. The Technician Certificate requires 24 credit hours with 15 hours in GIS/GPS areas of study and the balance in technical support courses. The Analyst Certificate requires 36 credit hours with 23 hours in GIS/GPS areas of study and the balance in technical support courses. On successful completion of the requirements the student will be awarded the appropriate Certificate.

GEOGRAPHIC INFORMATION SCIENCE TECHNICIAN CERTIFICATE

GIS/GPS Course Listing:	CREDITS
CRTG 1411 Introduction to GIS& GPS	4
CRTG 1401 Cartography and Geography in GIS and GPS	4
CRTG 1421 Introduction to Raster-based GIS	4
CRTG 2364 Practicum (or Field Experience)-Cartography	3
OR	

CRTG 2380	Cooperative Education -Cartography	3
		TOTAL CREDITS 15
Other Technical Courses		
Math 1316	Plane Trigonometry	3
CSCI 1338	Windows Application	3
CSCI 1343	Programming Techniques	3

GEOGRAPHIC INFORMATION SCIENCE ANALYST CERTIFICATE

GIS/GPS Course Listing:	CREDITS
CRTG 1411 Introduction to GIS& GPS	4
CRTG 1401 Cartography and Geography in GIS and GPS	4
CRTG 2411 Workplace GIS	4
CRTG 2401 Data Acquisition and Analysis in GIS	4
CRTG 1421 Introduction to Raster-based GIS	4
OR	
CRTG 2364 Practicum (or Field Experience)-Cartography	3
CRTG 2380 Cooperative Education -Cartography	3
TOTAL CREDITS 23	

Other Technical Courses

MATH 1316	Plane Trigonometry	3
CSCI 1338	Windows Application	3
CSCI 1343	Programming Techniques	3

Description of GIS/GPS Courses:

**CRTG 1411
INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND GLOBAL POSITIONING SYSTEMS (GPS) 4 CREDITS**

PREREQUISITE: None

LECTURE: 3 hours per week

LABORATORY: 3 hours per week

Introduction to basic concepts of vector Geographic Information Systems (GIS) using several industry specific software programs. Introduction to nomenclature of cartography and geography. Available as a classroom or distance education course.

**CRTG 1401
CARTOGRAPHY AND GEOGRAPHY IN GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND GLOBAL POSITIONING SYSTEMS (GPS) 4 CREDITS**

PREREQUISITE: CRTG 1411 OR DEPARTMENTAL APPROVAL:

LECTURE: 3 hours per week

LABORATORY: 3 hours per week

Introduction to principles of cartography and geography. Emphasis on global reference system and the use of satellites for measurements and navigation

**CRTG 1421
INTRODUCTION TO RASTER BASED GEOGRAPHIC INFORMATION SYSTEMS 4 CREDITS**

PREREQUISITE: CRTG 1411 OR DEPARTMENTAL APPROVAL:

LECTURE: 3 hours per week

LABORATORY: 3 hours per week

Instruction in GIS data sets include raster based information such as, images or photographs, acquisition of such data, processing and merging with vector data.

**CRTG 2411
WORKPLACE GEOGRAPHIC INFORMATION SYSTEMS (GIS) 4 CREDITS**

PREREQUISITE: CRTG 1401 OR DEPARTMENTAL APPROVAL:

LECTURE: 3 hours per week

LABORATORY: 3 hours per week

Application of GIS technology to real workplace applications from public and private sectors. Complete a number of separate projects using different software packages. GPS field work will be used as appropriate for lab exercises.

CRTG 2401**DATA ACQUISITION AND ANALYSIS IN GEOGRAPHIC INFORMATION SYSTEMS 4 CREDITS**

PREREQUISITE: CRTG 1401 OR DEPARTMENTAL APPROVAL:

LECTURE: 3 hours per week

LABORATORY: 3 hours per week

Study of the management of geographic information , system life cycle, costs and benefits.

Topics include demographic management and institutional issues such as data providers, data management, information storage and access, Texas and national standards for spatial data and application of GIS for demographic modeling and analysis.

CRTG 2364**PRACTICUM (OR FIELD EXPERIENCE) – CARTOGRAPHY****3 CREDITS**

PREREQUISITE: Completion of 12 semester hours of CRTG courses OR DEPARTMENTAL APPROVAL:

LECTURE: 1 hour per week

LABORATORY: 5 hours per week

Practical general training and experience in the workplace. The college with the employer develops and documents an individualized plan for the student. The plan relates the workplace training and experiences to the student's general and technical course of study. The guided external experience may be for pay or no pay. This course may be repeated if topics and learning outcomes vary.

CRTG 2380**COOPERATIVE EDUCATION - CARTOGRAPHY****3 CREDITS**

PREREQUISITE: Completion of 12 semester hours of CRTG courses OR DEPARTMENTAL APPROVAL:

LECTURE: 1 hour per week

LABORATORY: 5 hours per week

Career-related activities encountered in the student's area of specialization are offered through a cooperative agreement between the college, employer, and student. Under supervision of the college and the employer, the student combines classroom learning with 20 hours work experience. Directly related to a technical discipline, specific learning objectives guide the student through the paid work experience. This course may be repeated if topics and learning outcomes vary.

CRTG 1291**SPECIAL TOPICS IN CARTOGRAPHY****4 CREDITS**

PREREQUISITE: DEPARTMENTAL APPROVAL:

LECTURE: 3 hours per week

LABORATORY: 3 hours per week

Topics address recently identified current events, skills, knowledge, attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.