

Information

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11/05

The University of Texas at Dallas

Master of Science in Geographic Information Sciences (MGIS)



*A professional degree program
focused on the management and
analysis of spatially-referenced
information.*

<http://www.gis.utdallas.edu>

What is GIScience?

Powerful new technologies have emerged in recent years that greatly improve our ability to collect, store, manage, analyze, and utilize information regarding the features of the Earth's surface. These technologies include geographic information systems (GIS), the global positioning system (GPS), and satellite-based remote sensing, and they penetrate every aspect of our lives from digital maps in rental and delivery vehicles to the management and maintenance of city infrastructure, regional agriculture and forest lands. The term Geographic Information Sciences (GISci) has been coined to describe this growing and evolving field. (Source: *University Consortium for Geographic Information Science*.)

Masters in GIScience

The Master of Science in Geographic Information Sciences (MGIS) is a professional program offered jointly by the School of Social Sciences and the Geosciences Department in the School of Natural Sciences and Mathematics at the University of Texas at Dallas. This unique multi-disciplinary program, the only one of its kind in Texas, focuses on the technologies, analytical skills, and conceptual understandings necessary to acquire, manage and analyze spatially referenced information-- that is, information which is related by its location on the earth's surface. The curriculum incorporates the *Certificate in GIS* thus offering a degree option to students seeking additional expertise in this area.

Graduates of the program can apply their skills to public administration and policy analysis; public safety, criminology, and emergency management; environmental management; public works management; urban and regional, social service, and transportation planning; private sector business, especially marketing, site selection, logistics and real estate;

geophysical exploration, including petroleum.

GIScience Curriculum

Students must complete a minimum of 30 semester credit hours of work in the program consisting of a base requirement of 9 hours, a core requirement of 9 hours, a research project requirement of 3 hours, and prescribed elective courses for 9 hours. A 3.0 grade point average in the core requirement and an overall grade point average of 3.0 is required to graduate. With permission, up to six hours may be transferred from another institution. All courses must be taken within a single 6-year period. Up to 15 hours of courses taken as a non-degree student can be applied to a graduate degree. Hours taken for the *Certificate in Geographic Information Systems* meet the prerequisites for and provide credit toward the MGIS

Admissions

The University's general admission requirements are discussed in the Graduate Catalog. For the MGIS, a baccalaureate degree from an accredited university or college is required and Graduate Record Examination (GRE) or Graduate Management Aptitude Test (GMAT) scores must be presented. A 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of at least 1000 on the GRE, or equivalent score on the GMAT, are desirable. Admission may be conducted on-line at:

www.utdallas.edu/student/admissions/

**UTD is a member of UCGIS:
*The University Consortium for
Geographic Information Science***

Prerequisites

Students must have the equivalent of **GISC 6381 GIS Fundamentals/Intro to GIS** and **GISC 6382 Applied GIS**, or they must take these courses at UTD in addition to the 30 credit hours required for the MGIS. Beginning students are also expected to have completed college mathematics through calculus and at least one programming or computer applications course, or its equivalent

Required Courses:

For the Masters, students must complete:

Base Requirement (9 hours/3 courses from)

GEOS 5303 *Computing for Geoscientists*
GEOS 5306 *Data Analysis for Geoscientists*
POEC5313 *Descriptive and Infer. Statistics*
GISC 5317 *Computer Programming for GIS*

Core Requirement (9 hours/3 courses)

GISC 6383 *GIS Management and Impl.*
GISC 6384 *Spatial Analysis*
 or **GEOS 5423** *GIS Apps. in Geosciences*
GISC 6387 *GIS Workshop* (or **GEOS 5308** *Special Topics* with advisor consent.)

Research Project Requirement (3 hours)

GEOS 8000-level research course
 or **GISC 6389** *GISciences Master's Project*

Elective Courses (9 hours, not duplicated) (or other courses with prior approval)

School of Social Sciences

Advanced Regression Anal. (POEC 5316)
GIS Models and Theory (GISC 6385)
Urban Apps. of GIS/RS (GISC 6386)
GIS Application Dev. (GISC 6488)
GIS Apps. in Criminology (GISC 6332)
GIS Network Modeling (GISC 7362)
Internet Mapping (GISC 7363)
RS Digital Image Processing (GISC 7365)
Applied Remote Sensing (GISC 7366)
Spatial Statistics (GISC 7361)

School of Natural Sciences (GEOS)

GPS Satellite Surveying Techniques (5422)
GIS Applications in Geosciences (5423)
Intro to Remote Sensing (5325)
RS Digital Image Processing (5326)
Radar Remote Sensing (5328)
Applied Remote Sensing (5329)
School of Management (MIS)
Database Management Systems (6326)
Systems Anal. & Proj. Management (6308)
Decision Support Systems (6324)
Information Strategy Planning (6328)

Costs

The **total** cost per semester for Texas residents, including tuition and all fees, is approximately (Fall, 2005):

\$1,020 for **one** course
 \$1,855 for **two** courses

Textbooks may add \$75-\$125 per course.

Scheduling Examples

(part-time student)

30-hour program for students who have met prerequisite of *Intro to GIS* and *Applied GIS*.

Year 1

Fall	GEOS 5303 <i>Computing for Geosci*</i> or GISC 5317 <i>Comp. Prog. for GIS*</i> or other base requirement
	GISC 6383 <i>GIS Management and Implementation</i>
Spring	GISC 6384 <i>Spatial Analysis</i> * or GEOS 5423 <i>GIS Apps. in Geosci</i>
	GEOS 5306 <i>Data Analysis for Geosci</i> * Or other base requirement.
Summer	GISC 6387 <i>GIS Workshop</i> or GEOS 5308 <i>Topics</i>

Year 2

Fall	POEC 5313 <i>Descriptive & Inferential Statistics</i> or other base course
	Elective Option
Spring	Elective Option
	Elective Option
Summer	GISC 6389 <i>GIS Master's Project</i> or GEOS 8300 <i>Research</i>

36-hour program for students who have **not** met prereq. of *Intro to GIS* and *Applied GIS*

Year 1

Fall	GISC 6381 <i>GIS Fundamentals</i>
	GISC 6383 <i>GIS Management and Implementation</i>
Spring	GISC 6382 <i>Applied GIS</i>
	GISC 6384 <i>Spatial Analysis</i> * or GEOS 5423 <i>GIS Apps. in Geosci</i>
Summer	GISC 6387 <i>GIS Workshop</i> or GEOS 5308 <i>Topics</i>
	Elective Option

Year 2

Fall	GEOS 5303 <i>Computing for Geos. *</i> and/or GISC 5317 <i>Comp. Prog. for GIS*</i> or other base requirement.
	POEC 5313 <i>Descriptive and Inferential Statistics*</i> or other base requirement.
Spring	GEOS 5306 <i>Data Anal. for Geosc. *</i> or other base requirement
	Elective Option
Summer	GISC 6389 <i>GIS Master's Project</i> or GEOS 8300 <i>Research</i>
	Elective Option

* 3 of these 4 courses are required. The 4th may be taken as an elective or another elective substituted.

Facilities

Classes are offered through state-of-the-art GIS computing facilities housed at the *Bruton Center* in the School of Social Sciences and the *NASA Center for Excellence in Remote Sensing* in the Department of Geosciences, which are open extended hours including evenings and weekends.

Faculty

Dr. Mohamed G. Abdelsalam specializes in geological and environmental remote sensing and digital image processing applications, especially for arid regions.

Dr Carlos Aiken, a geophysicist and expert in GPS (Global Positioning Systems), specializes in potential field techniques and digital spatial data acquisition.

Dr Brian Berry AICP, is the world's most frequently cited geographer and a founding member of the *American Institute of*

Certified Planners. Before joining UTD he was Williams Professor of City and Regional Planning at Harvard University, and also directed the *Laboratory for Computer Graphics and Spatial Analysis* which provided the research foundation on which modern GIS is built.

Dr Ronald Briggs, a geographer by training, directed computing and telecommunications for the University for thirteen years, before returning to his academic specialty in spatial demographics and GIS.

Dr Kevin Curtin is a geographic information scientist with special interests in data modeling, particularly for transportation.

Dr John Ferguson is a geophysicist with interests in GPS, signal processing, and spatial data analysis.

Dr Dan Griffith is a quantitative geographer with expertise in spatial statistics, epidemiological and environmental assessment using GIS.

Dr Karen Hayslett-McCall, a criminologist and former patrol officer, specializes in the application of GIS to support policing.

Dr Jim Murdoch, an economist, specializes in econometric and spatial analysis applied to environmental and urban issues.

Dr Fang Qiu focuses on GIS and Remote Sensing modeling for urban and environmental applications.

Dr Robert Stern, a geologist, specializes in remote sensing applications with an interest in the geology of both the Middle East and the D/FW Metroplex.

Dr. Michael Tiefelsdorf, a geographer, specializes in spatial analysis and statistics, with emphasis on medical/epidemiological applications, demography and migration.

Associated faculty include **Dr. Stuart Murchison** (*Director of GIS, City of Dallas*) and **Mr. Jack Lyle MS**, a Registered Public Land Surveyor