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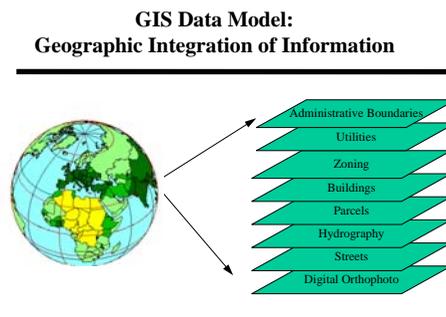
http://www.gis.utdallas.edu

UTD

The University of Texas at Dallas

Graduate Certificate in Geographic Information Systems (GIS)

**GIS Data Model:
Geographic Integration of Information**

Administrative Boundaries
Utilities
Zoning
Buildings
Parcels
Hydrography
Streets
Digital Orthophoto

Training for novice and experienced GIS professionals, combined with 15 hours of credit applicable to a graduate degree.

http://www.gis.utdallas.edu

Why study GIS?

Geographical Information Systems are rapidly becoming the core of many local **city and county** government operations, are being rapidly adopted by **state and federal** governments to manage operations from highway planning to environmental resource conservation, and are playing a major role in **businesses** as diverse as market research, site selection, real estate, civil engineering, and geophysical exploration. Additionally, **academic research** in disciplines ranging from the Social Sciences to Geosciences is using GIS.

What is GIS?

GIS is a combination of software and hardware with capabilities for storing, manipulating, analyzing and displaying **spatially-referenced** information--that is, information which is related by its location on the earth's surface. By **linking data to maps**, a GIS can reveal relationships not apparent with traditional item-referenced information systems and data base management products, and by displaying information in a graphic form can communicate complex spatial patterns succinctly.

Certificate in GIS

The *Graduate Certificate in GIS* provides the skills needed to apply GIS effectively and correctly in a variety of areas, while simultaneously developing proficiency in the use of GIS software. It comprises 15 graduate credit hours (5 courses) of integrated coursework. Completion is possible within a single (12-month) year. Individuals experienced with GIS may have the introductory course waived, but must take an additional course to total 15 hours. With permission, up to six hours may be transferred from another institution.

All classes for the certificate must be completed within a single 3-year period. Certificate hours also meet the prerequisites for and/or provide credit toward the 30 credit-hour *Master of Science in Geographic Information Sciences* degree for students desiring further proficiencies. These hours may also apply toward a *Master of Public Affairs* degree, or a *Master of Science in Geosciences*. Individuals desiring some exposure to GIS, but not wishing to pursue the full Certificate, may take selected courses.

Admission Requirements

You should apply for admission to UTD as a "non-degree seeking" student. You must have an undergraduate degree from an accredited institution. Admissions paperwork requires:
--an application to UTD Graduate School
--undergraduate transcript for graduation
You do **not** need a GRE (graduate record examination) score or letters of reference for admission **unless** you also wish to seek the Master's degree. Up to 15 hours of courses taken as a non-degree student can be applied later to a graduate degree should you desire. Admission may be conducted on-line at: *www.applytexas.org/*

Registration by Current UTD Students

Graduate students in any degree program may register for GIS courses using standard registration procedures. Undergraduate students eligible for the *Fast Track* program may also enroll. See your program adviser regarding degree-plan credit assignment. Courses are designated as **GISC** in the *UTD Class Schedule,* with additional offerings under **Political Economy** (POEC) and **Geosciences**(GEOS).

Required Courses:

For the Certificate, students must complete:

I. GIS Fundamentals (GISC 6381):
(previously, Introduction to GIS)
PC-based, hands-on introduction to GIS concepts, technologies and their applications. *(The choice for a general overview and basic software skill development.)*

II. GIS Management and Implementation (GISC 6383):
Teaches strategies for GIS management and implementation in organizations *(The choice for persons anticipating managerial oversight of GIS)*

III. Applied GIS (GISC 6382):
A laboratory course focused on further skill development in the application of current-generation GIS software in areas such as urban infrastructure management, marketing and location analysis, environmental management, geologic analysis and the social sciences. Prerequisite: GISC 6381
(The choice for professionals desiring to hone existing skills.)

IV. GIS Workshop (GISC6387/GEOS 5308)
Allows students to work on an independent project tailored to their professional needs or interests. Prerequisite: GISC 6382.

V. A Topics Course:
Take **one** from the following, or others if approved by the GIS Certificate director:

School of Social Sciences
Advanced Regression Anal. (POEC 5316)
Computer Program. for GIS (GISC5317)
Spatial Analysis and Modeling (GISC 6384)
GIS Models and Theory (GISC 6385)
Urban Apps of GIS/RS (GISC 6386)
GIS Network Modeling (GISC 7362)
GIS Apps. in Criminology (GISC 6332)
GIS Appl. Software Dev. (GISC 6488)
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 (5489)
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)

Pre-requisites

There are no formal prerequisites. Competence with MSWindows is expected.

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

A schedule to complete the Certificate in one (12-month) year is: **Fall:** *GIS Fundamentals* and *GIS Management and Implementation;* **Spring:** *Applied GIS* and a *Topics* course; **Summer:** *GIS Workshop.* Topics courses are generally offered yearly. *Intro. to GIS* is generally repeated in the spring and students may begin then also. Courses are timed late afternoon (4:00-6:45pm) and evening (7:00-9:45pm) to accommodate students who work full-time or have daytime commitments.

Facilities

Classes are offered through state-of-the-art GIS 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. These include multiple PC labs running Win. 2K for instruction; SUN and MAC systems for more specialized applications; and input/output devices for handling large scale GIS materials. Facilities 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 13 years before returning to his academic specialty in spatial demographics and GIS.

Dr Kevin Curtin is a GI 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

The Bruton Center

The *Bruton Center* focuses on the integration of GIS and spatial analysis for basic and applied social science research and policy analysis. It works closely with the instructional program in GIS. Its past accomplishments include founding the *North Texas GIS Consortium*, now part of the *North Central Texas Council of Governments*, an association of local public agencies committed to sharing spatial-based data for Dallas/Fort Worth.

Why Choose UTD?

Experience: a decade and more of research and teaching GIS

Innovation: the first Certificate in GIS in the Metroplex (1994); the first Master's degree in GISci (1998) in the State of Texas

Excellence: recognized by the North Central Texas Council of Governments for "excellence in GIS" in the D/FW Metroplex, and by the Oracle Corporation as a *Center of Excellence For Spatial Data Management*

National Recognition: the first organization from Texas admitted to the