PhD – Geospatial Information Systems Requirements

Other courses may be substituted for those listed below with the written permission in advance of the Director of the GIS Doctoral program.

Geospatial Science Core (15 SCH)
GISC 6381 GIS Fundamentals
GISC 6382 Applied GIS
GISC 6384 Spatial Analysis and Modeling
GISC 6385 GIS Theories, Models and Issues
GISC 5316 Regression Analysis with Spatial Applications or POEC 5316 Advanced Regression

Geospatial Specialization Area
Select from one of the following, with a minimum of 15 SCH. Courses selected must include at least three at successively advanced levels.

I. Geospatial Computing and Information Management
- CS 6359 Object Oriented Analysis and Design
- CS 6360 Database Design
- CS 6364 Artificial Intelligence
- CS 6366 Computer Graphics
- CS 6375 Neural Nets and Machine Learning
- CS 6378 Advanced Operating Systems
- CS 6V80 Spatial Data Management
- CS 6381 Combinatorics and Graph Algorithms
- CS 6384 Computer Vision
- GISC 5317 Computer Programming for GIS
- GISC 6388 GIS Application Software Development
- GISC 7363 Internet Mapping and Information Management
- * MISC 6326 Database Management Systems

II. Spatial Analysis and Modeling
- CS 5343 Data Structures
- *ECON 6309 Econometrics I
- *ECON 6310 Econometrics II
- *ECON 6311 Statistics for Economists
- *ECON 6314 Structural Equation and Multilevel (Hierarchical) Modeling
- *ECON 6315/POEC 7370 Time Series Econometrics
- *ECON 6316 Spatial Econometrics
- *GEOSS 5306 Data Analysis for Geoscientists
- GISC 7360 GIS Pattern Analysis
- GISC 7361 Spatial Statistics
- GISC 7363 GIS Network Modeling
- GISC 7364 Demographic Analysis and Modeling
- GISC 7368 Spatial Epidemiology
- GISC 7384 Advanced Raster Modeling
- *POEC 5313 Descriptive and Inferential Statistics
- *POEC 5316 Advanced Regression Analysis

III. Remote Sensing and Satellite Technologies
- GEOSS 5322 GPS Surveying Techniques
- GEOSS 5324 3-D GIS Data Capture and Ground Lidar
- GEOSS 5325/GISC 6325 Introduction to Remote Sensing
- GEOSS 5329/GISC 5329 Applied Remote Sensing
- GEOSS 7327/GISC 7367 Remote Sensing Workshop
- EE 6360 Digital Signal Processing I
- EE 6363 Digital Image Processing

IV. Customized Geospatial Specialization (15 SCH)
Identified by the student with approval in advance by the Director of the GIS Doctoral Program.

* May not be used in conjunction with certain other courses. Consult GIS Doctoral Program Director
Application Area or Technical Field (12 SCH)
Twelve semester-credit hours of specialized course work in an application area or technical field relevant to GIScience. Normally, these will derive from the student's master’s degree. These hours may be transferred from another institution, or taken at UT Dallas in an existing master's program area and may be applied toward a master's in that area.

*Application area examples:* planning, public affairs, criminal justice, health and epidemiology, geoscience, forestry, hydrology, marketing, real estate, economics, civil engineering.

*Technical field examples:* statistics, computer science, software engineering, management information systems, image analysis, operations research/location science, instrumentation.

Research and Dissertation (24 to 48 SCHs)
Which must include:
- GISC 7387 GIS Research Design
- GISC 7389 GIS PhD Research Project Qualifier

And may include:
- GEOS 8V21 Research in Remote Sensing, GIS and GPS
- GISC 6387 GIS Workshop
- GISC 6389 GIS Masters Project
- GISC 7367/GEOS 7327 Remote Sensing Workshop
- GISC 8V29 Research in GIS
- *POEC 5310 & 6342 Research Design I & II
- GISC 8v99 or GEOS 8v99 or CS 8v99 Dissertation

Other Related Electives (0-24 credit hours)
Students may choose up to 24 SCHs in related electives with consent of the GIS Program Director.

* May not be used in conjunction with certain other courses. Consult GIS Program Director

GISC: Geospatial Information Sciences
CS: Computer Science
GEOS: Geoscience
POEC: Political Economy, the designation for interdisciplinary graduate courses in the School of Economic, Political and Policy Sciences
MIS: Management Information Systems