



**University Graduate School  
2007-2008  
Academic Bulletin**

**Geography**

**School of Liberal Arts  
Indianapolis**

**Chairperson**

Associate Professor Jeffrey Wilson

**Departmental E-mail**

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**Departmental URL**

[www.iupui.edu/~geogdept/](http://www.iupui.edu/~geogdept/)

**Graduate Faculty**

(An asterisk [\*] denotes membership in the University Graduate School faculty with the endorsement to direct doctoral dissertations.)

**Professors**

Frederick L. Bein\*, Catherine J. Souch\*

**Associate Professors**

Timothy S. Brothers, Owen John Dwyer, Thomas Stanley Fedor, Jeffrey S. Wilson

**Director of Graduate Studies**

Associate Professor Jeffrey Wilson, Cavanaugh Hall 317, (317) 274-1128

**Degrees Offered**

Graduate Certificate in Geographic Information Science and Master of Science in Geographic Information Science

**Special Departmental Requirements**

(See also [general University Graduate School requirements](#).)

**Grades**

B (3.0) average or higher.

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## Graduate Certificate in Geographic Information Science

### Admission Requirements

Bachelor's degree from an accredited institution. Recommended minimum undergraduate GPA of 3.0. Appropriate work experience will also be taken into account in making decisions about admission. Three letters of recommendation and a personal statement.

### Course Requirements

Minimum of 15 credit hours, including a core curriculum consisting of G535, G538, and G539. The remaining courses are to be chosen from G536, G539, and G588.

## Master of Science in Geographic Information Science

### Admission Requirements

Undergraduate degree in geography or related discipline. Recommended minimum undergraduate GPA of 3.0. Appropriate work experience will also be taken into account when making decisions about admission. Satisfactory scores on the Graduate Record Examinations, three letters of recommendation, and personal statement.

### Course Requirements

A minimum of 30 credit hours including core requirements in GIS theory and methods from three of the following four courses: G535, G537, G538, G588. All students must take G560 and G539.

### Thesis or Research Papers

Students have the option of writing a thesis (G580) or two research papers (G845). Up to 6 credit hours are allowed for a thesis and up to 3 credit hours are given for each research paper.

## Courses

**G535 Introduction to Remote Sensing (3 cr.)** Principles of remote sensing of the earth and its atmosphere, emphasizing satellite data in visible, infrared, and microwave portions of the electromagnetic spectrum. Emphasis on practical applications and digital image analysis. A satellite data analysis project is required.

**G536 Advanced Remote Sensing: Digital Image Processing (3 cr.)** P: G535 or consent of instructor. Advanced remote sensing theory and digital image processing techniques with an emphasis on environmental science applications. Hands-on computer exercises provide significant experience in digital image processing techniques for extraction of qualitative and quantitative information about Earth's terrestrial and aquatic environments.

**G537 Computer Cartography and Graphics (3 cr.)** Compilation, design, production, and evaluation of maps and related graphic materials. Includes cartometric procedures, symbolization, color use guidelines, map typography, photographic manipulations, computer animation, and geographic visualization techniques.

**G538 Geographic Information Systems (3 cr.)** Overview of the principles and practices of Geographic Information Systems (GIS). Spatial data models, database design, introductory and intermediate GIS, operations and case studies of real-world GIS applications. Laboratory exercises will provide significant hands-on experience. Lecture and laboratory.

**G539 Advanced Geographic Information Systems (3 cr.)** P: G538 or consent of instructor. Intermediate and advanced topics in geographic information science and spatial analysis techniques using GIS software. This advanced course is for students who seek a greater understanding of this rapidly developing field and to learn how to construct, manage, and analyze their own GIS data and models.

**G560 Geography Internship (1-4 cr.)** P: Graduate level courses in geography and consent of instructor. Faculty-directed study of geographical problems based on an internship experience. Student's area of placement must be related to major field of study. Offered fall, spring, and each summer session. Student may complete more than one internship, but total credit earned cannot exceed 4 credit hours.

**G588 Applied Spatial Statistics (3 cr.)** P: consent of instructor. Extension of Traditional Statistical analysis to spatial data. Spatial means and spatial variances, the examination of differences in samples over space, spatial autocorrelation, nearest neighbor analysis, map comparison techniques. Emphasis on practical applications.\*\*

**G639 Topical Seminar in Geographic Information Science (3 cr.)** Applications of geographic information science principles in the collection and analysis of spatial data. Integration of GIS, remote sensing, and GPS technologies. Review of current literature on techniques, theory, technology, and applications with an emphasis on environmental topics. Discussion, laboratory, and research project.

**G704 Soils Geography (3 cr.)** P: G538. Examines the spatial aspects of soils from a global and local perspective including soil genesis, morphology, and classification; physical, chemical, mechanical and biological properties of soil; and land use mapping, analysis, planning, and management.

**G845 Research Papers in Geography (3 cr.)** Research papers under the supervision of faculty. Graduate students in the M.S. in Geographic Information Science program who choose the Research Papers option will develop two research papers under the guidance of their graduate advisor (IUPUI Faculty Member) and two other faculty members chosen in consultation with the advisor. The research paper topics will be related to the field of Geographic Information Science in their focus and methods.\*\*

**G850 Masters Thesis (3-6 cr.)** Directed research and writing under the supervision of a faculty committee.\*\*

\*\*New only to IUPUI.