



Spring 2016

**GEOGRAPHY 8200**

***Frontiers in Geographic Information Science (GIScience)***

**Tu.: 2:15-5:00pm, Room 1116, Derby Hall**

***Instructor: Daniel Sui***

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Office Hours: by appointment

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***Course Objectives:***

This graduate seminar is designed to strengthen students' theoretical foundation in GIScience and improve their research skills in GIScience-related projects. There are three specific objectives: 1. to explore the research frontiers in both GIScience theories and applications; 2. to train students to conduct rigorous research both "with" and "about" GIScience; 3. to facilitate students making progress towards completing their thesis/dissertation. Although this course emphasizes the theoretical and technical aspects of GIScience, issues related to the practical applications of GIScience in geography, earth science, computer science, social sciences, public health, and humanities will be covered.

Provided that students fulfill all the course requirements, they should expect to 1. acquaint themselves with the latest research priorities within the GIScience community; 2. deepen their understanding of the complex theoretical issues in GIScience along the scientific, technological, and social frontiers; 3. move beyond operating specific GIS software by linking their thesis/dissertation research to address fundamental issues in GIScience or their specialty domain.

***Course Requirements:***

1. All students are required to participate in ***class discussions and presentations***, and complete all the required writing assignments and homework.
2. ***Research Project***: Each student is required to complete a research project with the goal of future publication in mind. The project should focus on a theoretical issue in GIScience or GIS applications related to the student's thesis

or dissertation. Both a written report and an oral presentation (approximately 20 minutes) of the project are required.

### ***Course Evaluation:***

<b>1. Class Attendance and Performance:</b>	10%
<b>3. Weekly Assignment and homework:</b>	25%
<b>2. One take-home/open-book exam:</b>	15%
<b>4. Research Paper:</b>	40%
<b>5. Oral Presentation:</b>	10%

Course grade will be assigned according to the following scheme:

A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: below 60.

### ***Tentative Weekly Schedule***

*(the depth and breadth of the coverage on the following topics will be adjusted according to the interests of students enrolled in the class)*

Week 1: GIScience at a crossroad in 2016: Multiple visions for GIScience for the next five years

Week 2-3: Opportunities and challenges of open GIScience?

Week 4-5: Scientific Frontiers

New spatial ontologies: Is spatial special?

Representations of Space and Time; Spatial and temporal Scales

Spatially Integrated Social Sciences

Spatial Cognition

Uncertainty in Geographic Information

Week 6-7: Computational/Technological Frontiers:

Spatial computing and geocomputation

Spatial big data and data analytics/synergetics

The future of the spatial data infrastructure (SDI) & volunteered geographic information (VGI)

Visualization frontiers and spatialization of non-spatial information

Week 8-9: Space-time Analysis, Synthesis, and Modeling Frontiers:

Data mining and knowledge discovery

Geographically-weighted regression analysis

Spatial dimensions of the small world (complex networks)

Space-time analysis and human dynamics

Week 10-11: Ecological & Social Frontiers

Legal/Ethical & Aesthetic Frontiers

Alt.GIS

GIS and Society

Legal/ethical limit(s) of GIScience

Humanistic GIScience and affective computing

Week 12-13: Application Frontiers:

GIScience and urban regional studies

GIScience and public health research

GIScience and homeland Security

GIScience and global change studies  
GIScience and earth system model  
GIScience and spatially integrated social science & humanities  
Week 14-15: Student Research Paper Presentation

***Students with Disabilities***

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>

***Plagiarism and Academic Dishonesty***

Plagiarism, as commonly defined, consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. As instructor I am required to report all instances of alleged academic misconduct to the Committee on Academic Misconduct (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct ([http://studentaffairs.osu.edu/info\\_for\\_students/csc.asp](http://studentaffairs.osu.edu/info_for_students/csc.asp)).