ADVANCED GIS: Seminar in Spatial Analysis

Columbia University | GSAPP | Planning A6232
Spring 2014 | Mondays & Wednesdays 6-8pm | 200 Fayerweather

Professor: Juan Francisco Saldarriaga | jfs2118@columbia.edu
Teaching Assistant: Shraddha Ramani | sr3035@columbia.edu

01 | COURSE OVERVIEW

This research seminar is meant to provide students with advanced analytical and practical skills in Geographic Information Systems (GIS) and Spatial Analysis. In addition, the seminar also aims to teach students how to identify and frame unique research questions, how to develop a methodology for answering those questions and how to visually represent their research and findings. Finally, the class also seeks to introduce students to new techniques in mapping and collecting existing data.

Given the research seminar focus, the course will be centered around a final research paper and presentation. Working in groups of two, students will develop and frame their own research topics and questions and construct an adequate methodology using spatial analysis and advanced GIS techniques. In addition, during the whole semester students will be encouraged to work thoroughly on their graphic and presentation skills. Finally, students seeking to test potential thesis topics having a spatial component will be able to use this research seminar as a testing ground for their hypothesis and techniques.

02 | ADVANCED TOPICS

02.1 | Developing Research Questions

02.2 | Public Participation, Web-Mapping, APIs and Web-Scraping

02.3 | Surface Modeling

02.4 | Spatial Statistics

02.5 | Remote Sensing

02.6 | Decision Support

02.7 | Transportation and Land-Use

02.8 | Scripting

02.9| Data Visualization

03| EVALUATION AND GRADING

- 5% Attendance
- 10% Class participation and discussions
- 30% Individual assignments
- 15% Project proposal (midterm presentation, 5 - 10 minutes)
- 40% Final project (final presentation and paper, 10 minutes)

04 | RESOURCES AND MATERIALS

Course files, tutorials and presentations will be located on the X-Drive. This drive also contains the GIS data available to all GSAPP students. Students are encouraged to explore the data that already exists in the drive and if necessary, use it in their projects. In addition, students should also contact the Digital Social Science Center (DSSC) located in Lehman Library (SIPA) for extra information and data.

The readings for the class will be duly uploaded to Courseworks. Similarly, students will be required to submit their assignments by uploading them to Courseworks. Finally, the class will also rely heavily on submissions to the blog. Students will be required to upload some of their own work as well as inspirational material, encouraging and developing a critical stance and visual skills.

05 | SCHEDULE

Week 1 (Jan 22)	Introduction, course administration, syllabus
Week 2 (Jan 27 & Jan 29)	Webmapping, ppGIS, web-scraping and APIs
Week 3 (Feb 3 & Feb 5)	Data visualization
Week 4 (Feb 10 & Feb 12)	Spatial analysis and statistics
Week 5 (Feb 17 & Feb 19)	Surface modeling
Week 6 (Feb 24 & Feb 26)	Remote sensing
Week 7 (Mar 3 & Mar 5)	Network analysis and transportation planning
Week 8 (Mar 10 & Mar 12)	Midterm presentations
Week 9 (Mar 17 & Mar 19)	Spring break (no class)
Week 10 (Mar 24 & Mar 26)	Model builder
Week 11 (Mar 31 & Apr 2)	Scripting and software development
Week 12 (Apr 7 & Apr 9)	Data analysis, questions and problems
Week 13 (Apr 14 & Apr 16)	Work in class (final project development)
Week 14 (Apr 21 & Apr 23)	Work in class (final project development)
Week 15 (Apr 28 & Apr 30)	Final presentations