Advanced GIS

Planning A6232

Fall 2016

Mondays and Wednesdays 6-8pm

Fayeweather 202

Professor:

Nicholas J. Klein

n.klein@columbia.edu

321M Fayeweather Hall

Office Hours 1-3pm Mondays and by appointment

Teaching Assistants:

Christopher Giamarino

cdg2143@columbia.edu

office hours in UP Lounge: Tuesday's 2-4pm (and email)

Course description:

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.

Advanced Topics

- Developing research questions
- Public participation, web-mapping and APIs
- Surface modeling
- Spatial statistics
- Remote sensing
- Decision support
- Transportation and land-use
- Scripting
- Data visualization

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

The class will also rely on submissions to our blog gsappadvgis2016fall.tumblr.com (Links to an external site.)

Students are required to upload some of their own work as well as inspirational material, encouraging and developing a critical stance and visual skills.

Evaluation and Grading

- 5% Attendance
- 10% Class participation and discussion
- 30% Individual assignments
- 15% Final project proposal and midterm presentation
- 40% Final project and final presentation and report

Schedule

Week 1 (September 7): Introduction to the course and Python

Week 2 (September 12 / 14): Scripting: basic Python and APIs

Readings:

- What is Code (Links to an external site.) by Paul Ford
- How Nairobi got its ad-hoc bus system on google maps (Links to an external site.)

Tasks:

- Get Python 2.7 up and running on your own computer
- Complete the Code Academy Python (Links to an external site.) course – Finish by Sept 19th

Assignment:

- Upload a map of interest to our Tumblr site
- Submit one map and one piece of data visualization that you have done in the past.

Week 3 (September 19 / 21): Scripting: basic Python and APIs

Week 4 (September 28): Scripting: acrpy and scripting in ArcGIS

Week 5 (October 5): Webmapping and ppGIS

Week 6 (October 12): Spatial analysis and statistics 1

Week 7 (October 19): Spatial analysis and statistics 2

Week 8 (October 26): Remote sensing and midterm presentations

Week 9 (October 31 / November 2): Surface modeling

Probably no class on November 2

Week 10 (November 9): Network analysis and transportation planning

No class on November 7

Week 11 (November 14/16): Model builder

Week 12 (November 21): Spatial relationships and regressions

No class on November 23 – Thanksgiving

Week 13 (November 30): Work in class (final project development)

Week 14 (December 5 / 7): Final Presentations