MUSA Capstone: Advanced Topics in GIS

CPLN 680 / LARP 745

Course Syllabus

Details

Instructor: Jonathan Tannen, jonathan.tannen@gmail.com
When: Fridays, 8:30am - 11:30am
Where: 407 Fisher-Bennet Hall
Zoom (January 14 & 21):
- **Link**: https://upenn.zoom.us/j/97050641472?pwd=WGRSc0M2L0RWVmNhUmhRTE55czR6Zz09
- **Meeting ID**: 970 5064 1472
- **Passcode**: 942565

Description

This course offers an opportunity to work on independent projects involving the development and/or application of geographic information systems (GIS).

The course is organized as a seminar: a series of weekly meetings and concurrent assignments that ultimately lead to the implementation and presentation of student-initiated projects. Early in the semester, each student selects a term project dealing with one particular topic in the field of GIS, broadly defined. Topics may range from the basic development of geospatial tools and techniques to practical applications in any of a variety of fields.

Class time will be a combination of structured collaboration, external speakers, and (possibly) lectures on relevant content.

Course Resources

The course's GitHub repo will be the source of truth for the course.
https://github.com/CPLN-680-Spring-2022/Class-Resources

However, I've also created a Canvas page for email announcements and collection of assignments (if necessary).

Project Description

The requirements for the final project are intentionally broad, as students are expected to develop one that suits their interests.

Possible project formats include:
- A research paper with GIS analysis about a substantive question.
- A research paper about GIS or spatial methodology.
- Construction of a GIS tool.
- A dashboard *answering a question*. (The dashboard cannot simply be a view of the data. It must be targeted towards a novel question.)

For all projects, a complete set of data, scripts, and reports must be provided via GitHub or Google Drive. This should include the raw data, and all processing and analysis.

Students will present on their projects in the final two sessions of the class.

Course Calendar

This calendar is tentative. We will revisit it as we continue the semester.

Date	Assignment Due	Class Time
Jan 14 (Virtual)	Initial Topic Brainstorm	Introduction, Syllabus, Share Topics, Turnout Tracker Presentation
Jan 21 (Virtual)	Project Proposal 0	Share Project Proposal, Better Engineering: Github
Jan 28	GitHub Repo with initial data	Fay Walker (Urban Institute) presenting, Better Engineering: File Organization
Feb 4	Data Summary Analysis	Proposal & Data Summary Presentations A
Feb 11	–	Better Engineering: System Modularity, Proposal & Data Summary Presentations B, Michelle Montalvo and Seth Bluestein (Philadelphia City Commissioners Office) presenting
Feb 18	–	Dan Lopez (Office of Innovation and Technology) presenting
Feb 25	Mid-point Work In Progress	Nick Hand (Office of the City Controller) presenting, Mid-point Presentations A
Mar 4	Feedback for 2 peer projects	Mid-point Presentations B
Mar 11	*Spring Break*	
Mar 18	–	Better Engineering: Code Review
Mar 25	Peer Code Review	
Apr 1	–	
Apr 8	–	
Apr 15	Final Presentation (1)	
Apr 22	Final Presentation (2)	
Apr 29	*No Class*, Final Projects due	

Office Hours

Office hours will be by appointment. They can be in person or by video chat.

Wednesdays from 6pm - 8pm
Location TBD
Sign-up: https://calendly.com/jtannen/office-hours

Grading

Final Project: 50%
Final Presentation: 25%
Class Participation & Preparation: 25%

Assignments

Assignments must be submitted by the time the class meets. The first two assignments can be submitted on Canvas or by email. Subsequent assignments should be uploaded to GitHub.

01-14 Initial Topic Brainstorm: One-page (or less) document summarizing
- your topic
- an open question in the topic to research

- format of your final deliverable
- possible data sources

These will be considered non-binding proposals. The goal is to get you to start brainstorming.

01-21 Project Proposal 0: Two-page (or less) document with
- the question you will be answering
- datasets identified
- (brief) summary of existing relevant research
- high-level summary of methods and outputs

01-28 GitHub Repo: Share a GitHub repo for your project, with
- Raw data in a `raw_data/` directory.
- Any scripts, files, or cleaned data.
- A README file in the top directory.

02-04 Data Summary Analysis: An exploratory descriptive analysis of your dataset(s). Include summary statistics and visualizations that speak to your research question. All relevant code and files should be in your GitHub repo.

02-11 Project Proposal 1: An update of Project Proposal 0, with motivating data summary. This may just be a concatenated version of your Proposal 0 and Data Analysis, but your question and deliverable may have changed.

02-25 Work in Progress Report: A draft of your project, to be reviewed by two peers. Provide as much analysis as you can, to be able to get proper feedback.

Should include
- Introduction and motivation. - Literature review.
- Initial analysis and/or technical implementation.

These will be presented as Mid-Point Presentations (10 min + 5 min Q&A).

03-04 Peer Feedback: Peer review of two projects. Review goals include: Project design, implementation review, extension ideas.

03-25 Code Review: Code/implementation review of one peer project. We will discuss this in class.

04-29 (TBD) Final Project