PPUA 7237
Advanced Spatial Analysis of Urban Systems
Northeastern University
Spring 2025 Syllabus

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Office hours: **Appointments available online at mills.nu/mh**
Canvas site: **https://northeastern.instructure.com/courses/209005**

Course Description

Builds on skills covered in PPUA 5263. Offers students an opportunity to obtain greater depth in the analysis of urban spatial data focused on several urban systems (including social, built, and natural systems). Focuses on understanding the spatial relationships between various new and large urban datasets relevant to current policy challenges within cities. This is a project-based class. *Prerequisites: passing grade in PPUA 5263 or permission of the instructor.*

Class Policies, Assignments, and Grading

Please see Canvas for details of class policies, accessibility accommodations, and assignments. All assignments (or portions thereof) are graded on a 4-point GPA scale. Late assignments will be awarded a diminishing portion of the points, to 50% after two weeks. Unless otherwise noted, all assignments must be submitted by the last day of class unless an Incomplete Grade contract is signed by that date.

Required Materials

To complete class assignments you will need access to the current version of ArcGIS Pro software, either on your own computer or through the Azure virtual machine.

Please purchase this textbook:
Mitchell, A. (2020). The Esri Guide to GIS Analysis, Volume 1 (2nd ed.). Esri Press. Rent or buy e-book on VitalSource or purchase paper book through Esri Press or the university bookstore.

All other required reading materials are linked below through the Northeastern University Library system.

PPUA 7237 Course Calendar at a Glance

Week	Lecture Posted[a]	Lecture Theme	Readings[b]	Assignments	Assignments Due[c]	Points
1	1/7/2025	Spatial Analysis & Urban Systems [Video]	Berry 1964 Logan 2010 Mitchell 1 ch.1	Self-introductions; Intake exercise 1	1/13/2025	4
2	1/14/2025	Natural systems & overlay analysis [Video] *Guest: Bahare Sanaie-Movahed*	McHarg 1969 ch.3 Steiner 2022 Mitchell 1 ch.2	Zoning symbology & overlay exercise 2	1/20/2025	4
3	1/21/2025	Urban hierarchies & regional systems [Video]	Marshall 1989 Skinner 1986 Mitchell 1 ch.3	France urban hierarchy exercise 3	1/27/2025	4
4	1/28/2025	Introduce projects + US Census [Video]	Rice 2017 ESRI 2024 & 2023 Mitchell 1 ch.4	US Census exercise 4; Abstracts 1-4	2/3/2025	4 8
5	2/4/2025	Spatial clustering and zonal functions [Video] *Guest: Josh Lown*	Ryavec 2015 Mitchell 1 ch.5	China clusters & zones exercise 5	2/10/2025	4
6	2/11/2025	*Individual appointments* *No lecture*	ESRI Map Book Mitchell 1 ch.6	Project proposal	2/17/2025	4
7	2/18/2025	Descriptive & functional regions [Video]	Noronha 1992 Mitchell 2 ch.4	US multivariate clustering exercise 6	2/24/2025	4
8	2/25/2025	Networks & service areas [Video]	Pamuk 2006 ch.4 Mitchell 3 ch.5	*SPRING BREAK* *No assignments due*	—	—
9	3/4/2025	*SPRING BREAK* *No lecture*	—	Networks exercise 7; Abstracts 5-8	3/10/2025	4 8
10	3/11/2025	Metadata & scale [Video]	USGS 2024 ESRI 2024	Project status memo	3/17/2025	4
11	3/18/2025	*Individual appointments* *No lecture*	—	Project metadata draft	3/24/2025	4
12	3/25/2025	Analytic cartography [Video]	Buckley 2011 Li 2016	Project map design draft	3/31/2025	4
13	4/1/2025	Fun with Map Projections [Video]	Harris 2016 [video] Hsu 1981 Nelson 2024	Projections exercise 8; Abstracts 9-13	4/7/2025	4 8
14	4/8/2025	Review & the Future of GIS [Video]	—	Project video	4/14/2025	12
15	4/15/2025	Student project videos	—	Project memo; Peer video reviews	4/21/2025	12 4

Notes

[a] This is an asynchronous online class. You may choose to join the weekly lecture online on Tuesdays at 1:00pm Pacific Time / 4:00pm Eastern Time, or you may view a videorecording of the lecture, which will be posted on Canvas later on Tuesdays.

[b] Please complete the readings *before* viewing the lecture each week.

[c] Assignments are due on Canvas by 12 noon Pacific Time / 3:00pm Eastern Time on the Monday following each Tuesday lecture, university holidays notwithstanding. Any extensions must be requested in advance of the due date.