Course Title: **Geographic Information Systems for Public Service**

Course:	PAD 5304 / PADX 5380	Semester:	Summer 2025
CRN:	33748 / 34157 / 33171	Tuesday / Wednesday:	(VIRTUAL) 6 to 8 p.m.

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Instructor and TA hours: (VIRTUAL) by appointment

Course Description

Geographic Information Systems (GIS) is a powerful technology widely used in urban planning, business and environmental management, for strategic purposes, and, consequently, in the public policy sphere. This course introduces the fundamentals of GIS, including data acquisition and entry, spatial analysis techniques, and representation and design of spatial information. The techniques will be taught through book exercises and lab assignments. Upon completion of this course, students will be technically proficient to identify relevant datasets to construct maps and spatially analyze a policy question with economic, social or environmental implications.

Students should be prepared for a course that is challenging in many (good) ways. You will need to spend several hours each week working on the *Getting to Know (GTK)* book chapters and lab tutorials while thinking about the socio-economic implications of GIS. This means you can fall behind quickly if you do not invest the necessary time each week. Labs will consist of Blackboard videos and virtual sessions on the software concepts, tools and techniques that are sequential in nature.

Required Textbook

Law and Collins (2024). *Getting to Know ArcGIS PRO 3.2, 5th Edition*, Redlands: ESRI Press:
< https://www.esri.com/en-us/esri-press/browse/getting-to-know-arcgis-pro-3-2 >

Technology Requirements

Course content is delivered via **Blackboard** with an active use of **Messages Board**, **Discussion Board** and **Zoom**. This class is using the **ArcGIS Pro** software – the University provides a free student license through its software portal below. Download and install the application and call the UTEP Helpdesk if you need assistance with the license.
< https://www.utep.edu/technologysupport/servicecatalog/software_pages/soft_arcgis.html >

There are computer hardware and operating system (OS) requirements to install ArcGIS Pro described in the link below. The key is that you have an OS of Windows 10 or higher with sufficient storage and memory. Older systems may be required to install **Microsoft .Net 8.0** before running

the ArcGIS Pro installation as well as **Microsoft Edge WebView2 Runtime**. In addition, the Chrome or Microsoft Edge browsers may be more amenable for the download process.
< https://pro.arcgis.com/en/pro-app/latest/get-started/arcgis-pro-system-requirements.htm >
< https://dotnet.microsoft.com/en-us/download/dotnet/thank-you/sdk-8.0.410-windows-x64-installer >
< https://www.esri.com/arcgis-blog/products/arcgis-pro/administration/arcgis-pro-3-3-requires-webview2-runtime-and-you-probably-already-have-it >

ArcGIS is Windows-based, so Mac users need to buy and install a program like *Parallels* that creates a "virtual" Windows OS environment. **It is important to have the software installed and ready for use by the first day of class.**

Communication

The best way to contact me is through the Messages Board or e-mail. I will try to respond within 24 hours of receipt, but if it involves anything that is time sensitive call or text me. Given the short nature of this class, **you are encouraged to work together and/or post questions in the weekly folder's Discussion Open Forum**. I will also be available via Zoom by appointment (e-mail or text to coordinate a time) to answer any question(s) and/or provide feedback on your GIS work.

Class Recordings

This is an asynchronous online class. Lab sessions will be recorded via Zoom to allow you to access and review questions and instructions at your own pace. The use of recordings complies with the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable use policy.

Netiquette

Keep in mind the following network etiquette guidelines when participating and posting online. Failure to observe them may result in disciplinary action.

- All class communication must be professional and respectful and reflect polite consideration of other's ideas or questions.
- Any class recordings and postings are considered private and confidential. They are intended solely for class participants and not for public broadcast or dissemination.

Students with Disabilities

UTEP provides academic accommodations for students with disabilities to provide equal opportunities in their studies. Students must register with the Center for Accommodations and Support Services at 915-747-5148 (cass@utep.edu) for consideration. Please communicate with CASS and, if you feel comfortable, notify me as soon as possible if you require accommodations so that you do not fall behind.

Scholastic Dishonesty Policy

Students are expected to respect the University's standards on academic dishonesty. You owe it to yourself, your fellow students, and the institution to maintain the highest standards of integrity and ethical behavior. A discussion of academic integrity can be found at the Office of Student Conduct and Conflict Resolution web page. Any suspected violations will be reported to this office.
< https://www.utep.edu/student-affairs/osccr/student-conduct/academic-integrity.html >

Drop and Incomplete Grade Policy

I will not drop you from the course. If you feel you are unable to successfully complete the course, please let me know and initiate the drop process with the Registrar's Office before the drop deadline to receive a grade of "W" withdrawal. You risk failing the course if you do not take this step. You can request an "I" incomplete under justified circumstances if you have completed at least half of the course requirements. Consult with me immediately to discuss your situation. If granted, we will establish a contract with deadlines of work to be completed.

Syllabus Disclaimer

The syllabus provides an outline of what will be covered in this course. It is subject to change in case of extenuating circumstances and according to the instructional needs and interests of the class as the topics progress. Any changes will be announced to the class.

Course Requirements

Students are responsible for materials provided in Blackboard and required to complete their work by the due date. **Late assignments will be downgraded.** Grading is based on your quality of work in the following areas:

Exercises (50%)
GTK chapter exercises are critical to learn the basics of the GIS software concepts and tools. Upon completion, you will upload a screenshot of nine assigned works for grading.

Lab Tutorials (35%)
Tutorials are designed to complement *GTK* concepts and techniques. They teach students how to retrieve, import and analyze spatial datasets from various sources. Upon completion, you will upload PDF maps of three tutorial assignments.

Presentation (15%)
Your final project combines your learned GIS skills and insights into spatial representation of a policy relevant question with economic, social or environmental implications. You will spatially assess a current issue or an alternative perspective to an issue and present it to the class. Learning GIS is time-consuming so give yourself ample time to gather and analyze your data.

Course Outline – upload your work into respective Blackboard weekly folders

Week 1: *GTK* chapters 1 (pp. 1-10), 2 and 3

GTK assignments **due July 12**

- Chapter 2 – Explore and symbolize feature attributes
  - World cities map plus the attribute table with the selected five most populous cities (**p. 47**)
- Chapter 3 – Query and export feature attributes, joining nonspatial data, and layer symbology
  - Illinois map of polygon layer with obesity rates and point layer with median income (**p. 94**)
    – Apply and symbolize data statistics
  - Illinois map of polygon layer with percent change blue color symbology (**p. 100**)
    – Relate tables and spatially join data
  - Illinois map of food desert counts by county (**p. 110**)

Lab 1 due July 14 – Data management and projection

Lab 1 Continued due July 18 – Map making

Week 2: *GTK* chapters 4 and 6

GTK assignments **due July 21**

- Chapter 4 – Build geodatabase, geocoding, and modifying features
  - Troutdale map of the two water pressure zones merged into single feature (**p. 145**)
- Chapter 6 – Join nonspatial table, address locator, buffers, and merge, dissolve and clip features
  - Houston map of the single bike lane buffer and the clipped retail site prospects (**p. 222**)
    – Select by attributes and location and spatially join features
  - Houston map of the remaining three retail site prospects with bike lanes and stations (**p. 227**)

Lab 2 due July 25 – Data acquisition and joining tables

Presentation – Start defining project idea and collecting data (must apply five geoprocessing tools)

Week 3: *GTK* chapters 7 (pp. 229-238) and 9

GTK assignments due **July 28**

- Chapter 7 – Kernel density and hot spot analysis
  - Philadelphia map of robber hot and spots (**p. 236**)
- Chapter 9 – Map presentation
  - Utah county broadband map (**p. 316**)

Lab 3 due August 1 – Geocoding and spatial statistics

Week 4 Projects

Presentations **August 5-6**