

# URP 520: Introduction to Geographic Information Systems Winter 2020

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This course is designed to introduce students to the dynamic field of geographic information systems (GIS). The course has three interrelated objectives: (1) provide a foundation in concepts from cartography, spatial analysis, and computer science used in GIS applications, (2) develop specific skills using ESRI ArcGIS Pro, ESRI ArcMap, QGIS, and other software applications through a set of hands-on exercises, and (3) allow students to apply these skills through a mapping project on a topic of their choosing. Although urban planning topics will be emphasized, the course is intended to serve as a general introduction to GIS. Students will learn the basic principles of GIS, practice mapping spatial data, study examples GIS analysis, and develop and implement simple analysis models.

## Learning Goals

This course learning goals support the program's Planning Skills Goal 1: *Collect, analyze, and interpret data from a variety of sources common to the planning profession*. At the end of the term, students will be able to:

- Create and manipulate raster and vector data within GIS to visualize urban phenomena
- Create maps which conform to accepted cartographic standards to ensure clear communication
- Design and conduct analysis which use GIS functionality such as dissolve, clip, buffer, and overlay to answer spatial questions
- Describe the potential applications of GIS, web mapping, and planning support systems within professional practice.
- Apply GIS to a real-world question or problem by conducts a complete GIS mapping project including obtaining data, conducting an analysis, creating maps, and reporting the project in a poster through text, maps, and other visualizations.

## Course Requirements

The main course requirements are: (1) weekly technical lab assignments, (2) a conceptual midterm exam, (3) reading responses to articles describing GIS applications, and (4) a final poster project applying GIS to a topic of the student's choosing.