



**URPL 6250: GIS for Urban Planning**  
**Department of Urban and Regional Planning**  
**College of Architecture and Planning**  
**University of Colorado Denver**

### **Professor**

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 (sign up at <https://www.wejoinin.com/sheets/zfyxg>). If you absolutely cannot meet during these regular times, email me and we will set up an alternative meeting time.

### **Course Logistics**

Name: (URPL 6250) GIS for Urban Planning (3 Units)  
 Website: <https://ucdenver.instructure.com/courses/419013>  
 Term: Fall 2019  
 Class Meeting Days: Friday  
 Class Meeting Hours: 9:30 A.M. – 12:15 P.M.  
 Class Location: NORTH 5033  
 Lab Location: NORTH 5033 (or announced in class)

## **COURSE OVERVIEW**

### **1. Welcome!**

Many of us live in cities. You might notice that places we inhabit are full of events marked by space and time. For example, a bus stopping is a small occurrence in terms of its spatial and temporal footprint whereas the creation of an urban park is a large spatio-temporal event (i.e., takes a much longer time horizon to plan, fund, and build a park, and an urban park is typically larger than a bus). Similarly there are bicyclists, fire and police stations, roads, city blocks, parking spaces, parking meters, restaurants, and many other “things” in the city. These large and small things may be stationary or mobile, may have large or small footprints, or may be temporally around only for a few seconds or for decades. In the aggregate, these things make the city.

In this class we’ll learn how to look at these “things” spatially using a Geographic Information System (GIS) framework. We’ll think of the interactions between these elements, and how a systematic analysis of such data can lead to key policy insights e.g., Are bicycle accidents occurring around a certain type of intersection? Will a law about green roofs actually work in Denver?

## 2. University Course Catalog Description

This course is an accelerated introduction to GIS that focuses on spatial analytics for Urban Planning. The course includes advanced GIS applications and tools; GIS integration with other applications and technologies; and innovations in geo-spatial data collection, analysis, and presentation. Max hours: 3 Credits.

## 3. Course Structure

The instructor will give a short lecture during the days with labs. Much of the class time will be spent learning the skillset that will enable you to analyze geo-spatial data. Learning will be through a series of labs, and your skills from the lab will be reinforced through assignments. There are 9 labs in this course and associated homework assignments. You are expected to budget, on average, about 6 hours every week for this workload including time in class. Please note that some students will finish the labs and assignments faster than others.

The exam for this course is a term project presentation session to be held on 6<sup>th</sup> December. Throughout the semester, I will provide guidance on how to move from problem definition, through analysis, to the final presentation. Please note that this term project will be in teams of 2 students.

## 4. Course Goals and Learning Objectives

*Goals:* The pedagogical emphasis of this course is on how to interpret an urban issue, identify sources for evidence, and analyze spatial information using commercial software. From a practitioner's perspective, the class will teach students how to be planners who are required to test policy using evidence and defend analyses before an expert and non-expert audience. The methodological focus of this course is to show students how to use commercially available software (ESRI's ArcMap 10.x) to visualize and analyze spatial data as planners. Students will learn how to apply GIS analysis to real world planning problems using publicly available datasets. This is a hands-on, skills building course with a primary emphasis on city/urban spatial data. Through a series of lectures and lab exercises the students will learn how to identify key spatial issues, run analyses on the gathered information, and present output as maps.

*Objectives:* At the end of this course the students will be able to:

- Select and create appropriate thematic maps for data with different levels of measurement;
- Design attractive, readable and useful maps through good cartographic practice;
- Utilize geoprocessing tools (e.g., buffer, intersection, union, clip/erase, spatial join) to address planning questions;
- Use spatial data showing real-world planning problems, and present possible policy recommendations for resolving planning issues;
- Process and analyze GIS data related to the urban and regional planning profession;
- Create conference-style presentations and research reports to summarize analysis; and
- Make an effective presentation of the kind that planners are routinely asked to make to decision-makers and the public.

## 5. Course Schedule

All labs will be available on Canvas at the start of the session, and all assignments will be due at the start of the next session the following Friday (unless specified otherwise). The three best assignments (anonymized) will be shared with the class to enable learning from peers.

Week	Date	In-class (mandatory) activity	Assign-ments
1	23-Aug	Introduction to Class, key concepts (Projection, Tables, ArcGIS)	
2	30-Aug	Lab 1: Introduction to Database Management and Microsoft Excel	1
3	6-Sep	Lab 2: Introduction to ArcMap	2
4	13 - Sep	Lab 3: Understanding public sources of info and Working with Census Data	3
5	20-Sep	Lab 4: Map Making	4
6	27-Sep	Discussion 1 for term project	
7	4-Oct	Lab 5: Vector-based geo-processing	5
8	11-Oct	Lab 6: Raster-based geo-processing	6
9	18-Oct	Lab 7: Network analysis	7
10	25-Oct	Discussion 2 for term project (Strava seminar 9.30-11.00 am)	
11	1-Nov	Lab 8: Suitability analysis with weights	8
12	8-Nov	Lab 9: Address location, Heat maps, and 3d extrusion	9
13	15-Nov	Term project prep	
14	22-Nov	Discussion 3 for term projects	
15	29-Nov	Fall Break (No Class)	
16	6-Dec	Term project presentation	
17	13-Dec	Finals week (Project report due)	

## 6. Course Prerequisites

*Interest:* Students interested in the field of geo-spatial analysis would be well prepared for this course. I do not expect that you will have any experience in the ESRI ArcMap environment.

## 7. Required Textbooks

There is no required textbook for this class. However, here are some textbooks that may be of interest to you:

- Ferrari E. and Rae A. (2019) *GIS for Planning and the Built Environment: An Introduction to Spatial Analysis*, McMillan International Higher Education and Red Globe press, London, UK
- Longley, P., Goodchild, M., Maguire, D., and Rhind, D. (2015) *Geographic Information Science and Systems*, 4<sup>th</sup> Edition, John Wiley & Sons, Hoboken, NJ
- Krygier, J. and Wood, D. (2016) *Making Maps: A Visual Guide to Map Design for GIS*, 3<sup>rd</sup> Edition, The Guilford Press, New York, NY
- Price, M. (2016) *Mastering ArcGIS*, 7<sup>th</sup> Edition, McGraw Hill, New York, NY

## EVALUATION

### **8. Assignments and Deliverables**

Students enrolled in URPL 6250 are required to finish the research term project and project report in teams of two students. This class has no written exam but the workload requires students to budget around 6 hours weekly for the class, especially for lab assignments, term project development, and report writing. The laboratory exercises and assignments are integral parts of the course and help illuminate the principles of spatial analysis, i.e., they teach skills that are useful in the Planning job market. To make learning more pertinent to student interests, the lab exercises use real data from local communities, with a focus on DRCOG. You will get familiar with ArcMap and get to know the DRCOG Open Data Catalogue (<https://data.drcog.org/>) mainly via the assignments.

*Labs/Assignments:* The course has nine (9) labs which are run during class, and nine (9) homework assignments associated with the labs that have to be submitted on Canvas as Microsoft Word documents. This format allows us to grade and comment on your homework directly. All labs and assignments will be available on Canvas at start of class. These labs constitute a bulk of the workload during class hours. Lab time is critical and gives an opportunity for one-on-one instruction. You will get most help during lab hours—both for your labs and the term project (see below). Students cannot collaborate on labs or homework assignments. Each student must submit unique work products for each assignment. Plagiarism will not be tolerated. Your ability to use ArcMap and the quality of your term project will benefit from attending and finishing each lab and assignment individually.

*Term Project:* Students are encouraged to find urban policy-based stories from Denver to seek inspiration for project ideas. Some sample issues are: differences between neighborhoods, gentrification, suburbanization, infill development, bicycle infrastructure, speeding, pedestrian and bicyclist safety, locating schools, and others.

You must identify one issue to focus on as a term project. You are required to formulate an argument, relying on data available in class, run analyses, and present the output as a series of slides in class. You are required to defend your arguments using evidence, where the audience may include experts from campus and the larger community. The purpose of the term project is to give you a chance to apply all of the tools you learn in the class to an area of your interest. You should start analyzing the datasets you will need and creating some of the maps for the final project while completing the assignments. Soon after learning the tools each week, you are expected to take a lead on incrementally preparing your final project. The instructor will be available in class and during office hours to discuss issues. Further details about expectations for each deliverable will be provided during the course.

A focus on critical thinking with analysis must be evident in the work produced. Students are required to produce a 4,000-6,000 word single-spaced project report. Further instructions will be provided during the semester.

***Class Participation:*** In order to encourage you to share your thoughts and ideas with the class, 5% of your course grade will be determined by the quality and quantity of your participation in various course activities. You can earn participation credits by answering questions, asking questions, or commenting in class; or by posting to discussions on the class website. As a result, attendance/engagement will have an impact on your grade; however, the instructors will not take attendance at every class session.

## 9. Basis for Final Grade

Assessment	Points Possible	Percent of Final Grade
Homework assignments	9 × 7 points each = 3 points	63%
Term project and report (teams of two students)	32	32%
Attendance and participation	5	5%
Total	100	100%

This course uses the grading scale of the university and the MURP Department:

Letter	Definition
A (94 to 100) A- (90 to 93)	Exceptional scholarship and superior work products that significantly exceed stated requirements in scope and/or quality
B+ (87 to 89) B (84 to 86) B- (80 to 83)	Commendable scholarship and accomplished work products that somewhat exceed stated requirements in scope and/or quality
C+ (77 to 79) C (74 to 76) C- (70 to 73)	Satisfactory scholarship and work products that meet or almost meet stated requirements in scope and/or quality
D+ (67 to 69) D (65 to 66) D- (60 to 63)	Inadequate scholarship and inferior work products that clearly fail to meet stated requirements in scope and/or quality
F (59 or lower)	Unacceptable scholarship and work product

## 10. Grade Dissemination

Graded tests and assignments in this course will be returned via the Canvas course shell.

## COURSE PROCEDURES

### 11. Course Policies

**Attendance Policy:** The instructor has not designed this course so as to learn the material remotely. Students are expected to attend all sessions, participate in class, and finish all the assignments. Students are expected to arrive on time for all sessions and meetings. The instructor may or may not take attendance in each class.

**Late Work Policy:** Late submissions will carry a penalty as follows:

After deadline but before 12 hours from deadline: Penalty is 25% marks

After 12 hours but before 24 hours from deadline: Penalty is 50% marks

After 24 hours but before 48 hours from deadline: Penalty is 75% marks

Your submissions will be online and date stamped by the server. No late submissions will be accepted after two days from deadline.

For an excused absence where the cause is religious belief, a student must contact the instructor within two weeks of the start of classes to request accommodation for the term. Instructors may request adequate documentation to substantiate the student request.

A student who cannot complete one of the course assignments due to incapacitating illness, severe domestic affliction, or other compelling reason should contact the instructor via e-mail as soon as possible. The weight of the missed assignment will be added to the term project.

A student who cannot present the final term project due to incapacitating illness, severe domestic affliction, or other compelling reason can apply to the instructor for another date to present the final term project. Such an application must be made to the instructor within 48 hours of the missed deadline and must be supported by appropriate documentation. If a deferred accommodation is necessary, it will take place on Friday 13<sup>th</sup> December, 2019 at 10:00 A.M. in the instructor's office (CU BLDG 320W). Deferral of term work is a privilege and not a right; there is no guarantee that a deferral will be granted.

**Grades of “Incomplete”:** The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course; students have up to one year (three semesters) to complete course requirements. The instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished within the time allowed or the “I” will automatically be recorded as an “F” on your transcript.

**Group Work Policy:** Everyone must take part in the term project. For each deliverable consisting of more than one student, as part of the submission, the instructor will require you to fill up a table in consultation with the other team member. This table will document the work contributed towards the various elements of the assignment by each team member. The instructor will use this work-split table to determine weights for the grade for that deliverable. Please note that once formed, groups cannot be altered or switched, except for reasons of extended hospitalization.

## 12. Technology and Media

**Email:** If you have a question for the instructor you can email him at manish.shirgaokar@ucdenver.edu. Please state in the subject line URPL6250 and say briefly what the email is about. The instructor will make every effort to answer emails within a reasonable time.

**Canvas:** We will use Canvas for this course. All announcements, assignments, and discussions for this course are conducted via Canvas. Students are expected to log into the Canvas website at least once every 2-3 days to keep up with the class.

**Recording course content:** The course may not be recorded in audio or video format for any reason except with the explicit permission of the instructor.

### **13. Student Expectations regarding Civility:**

My commitment is to create a climate for learning characterized by respect for each other and the contributions each person makes to class. I ask that you make a similar commitment.

**CU Denver Student and Community Counseling Center:** The Student and Community Counseling Center is located in Tivoli 454 and provides cost-free and confidential mental health services to help students manage personal challenges that impact emotional or academic wellbeing. You can learn more at the Center at <http://www.ucdenver.edu/life/services/counseling-center/Pages/default.aspx> or by calling (303) 315-7270.

**Professionalism:** Mobile devices must be silenced during all classroom and lab meetings. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment.

## **UNIVERSITY POLICIES**

### **14. Access**

**Disability Access:** The University of Colorado Denver is committed to providing reasonable accommodation and access to programs and services to persons with disabilities. Students with disabilities who want academic accommodations must register with Disability Resources and Services (DRS) in the Student Commons Building, Suite 2116, Phone (303) 315-3510, Fax (303) 315-3515, or via email [Disabilityresources@ucdenver.edu](mailto:Disabilityresources@ucdenver.edu). See <http://www.ucdenver.edu/student-services/resources/disability-resources-services/Pages/disability-resources-services.aspx>. I will be happy to provide approved accommodations, once you provide me with a copy of DRS's letter.

### **15. Academic Honesty**

**Student Code of Conduct:** Plagiarism is the use of another person's ideas or words without acknowledgement. The incorporation of another person's work into yours requires appropriate identification and acknowledgement. Examples of plagiarism when the source is not noted include: word-for-word copying of another person's ideas or words; the "mosaic" (interspersing your own words here and there while, in essence, copying another's work); the paraphrase (the rewriting of another's work, while still using their basic ideas or theories); fabrication (inventing or counterfeiting sources); submission of another's work as your own;

and neglecting quotation marks when including direct quotes, even on material that is otherwise acknowledged.

CU Denver has a license agreement with Turnitin.com, a service that helps detect plagiarism by comparing student papers with Turnitin's database and Internet sources. Students who take this course agree that all required papers may be submitted to Turnitin. While students retain copyright of their original course work, papers submitted to Turnitin become part of the Turnitin's reference database for the purposes of detecting plagiarism.

### **16. Nondiscrimination and Sexual Misconduct**

The University of Colorado Denver is committed to maintaining a positive learning, working and living environment. University policy and Title IX prohibit discrimination on the basis of race, color, national origin, sex, age, disability, pregnancy, creed, religion, sexual orientation, veteran status, gender identity, gender expression, political philosophy or political affiliation in admission and access to, and treatment and employment in, its educational programs and activities.

University policy prohibits sexual misconduct, including harassment, domestic and dating violence, sexual assault, stalking, or related retaliation. If you have experienced some sort of sexual misconduct or discrimination please visit the Office of Equity/Title IX web site to understand the resources available to you or contact the Office of Equity/Title IX Coordinator (303) 315-2567. <http://equity.ucdenver.edu/sexual-misconduct-title-ix/>

### **17. Important Dates to Remember**

**Academic Calendar:** Please review the academic calendar for important dates available at <http://www.ucdenver.edu/student-services/resources/Registrar-dev/Documents/AcademicCalendars/AcademicCalendarFall2019.pdf>

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