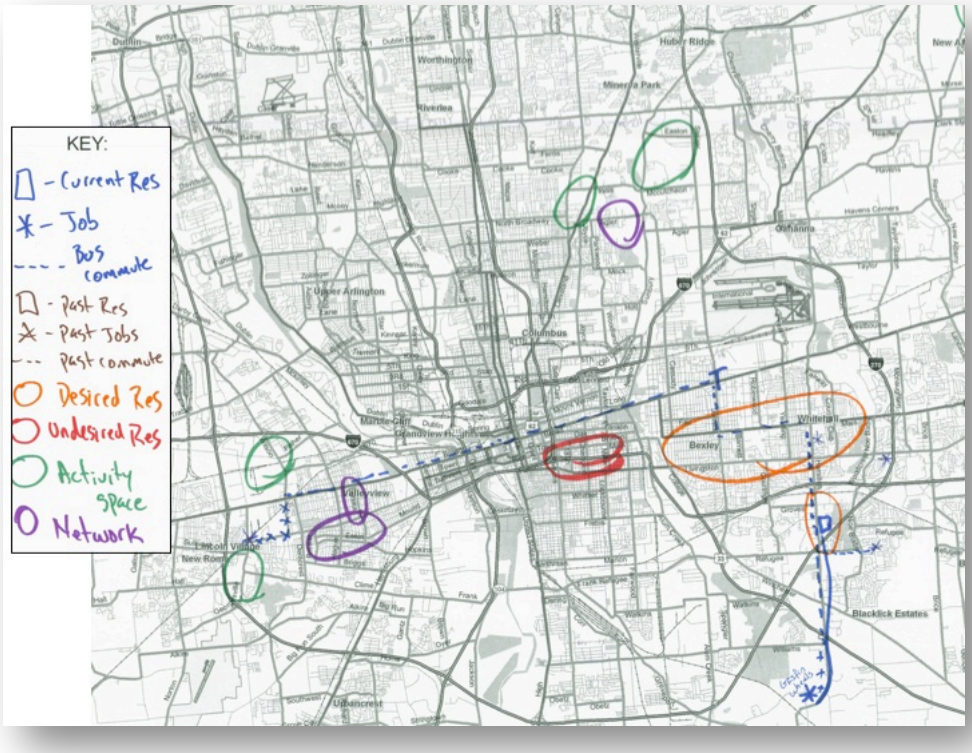

Geography 3410: Urban Applications of GIS

Spring 2015
Boettcher West #125
Mon & Wed 2:00p – 3:50p

Instructor: Dr. E. Eric Boschmann
Office: Boettcher West, room 112
Office hours: Mon. 1-2; Thurs. 2-3; or by appointment
e-mail: eric.boschmann@du.edu
tel: 303.871.4387
Course website: canvas.du.edu

Co-facilitator: Jennifer-Grace ("Jen") Ewa, JD/MUP
Postdoctoral Fellow in Open Space
Interdisciplinary Research Incubator for the Study of (In)Equality (IRISE)
e-mail: jennifer.ewa@gmail.com
Office hours: by appointment (BW237)

Course Description: This course uses the tools of geographic information systems (GIS) to explore concepts of traditional urban geography, including: defining cities/metropolis, internal urban structures, urban systems, industrial location, social and residential patterns, urban form, environmental problems, and urban planning. The course allows students to practice fundamental skills in GIS (e.g. working with attribute tables, spatial analysis, spatial queries), cartography (map design, color theory, display of information), professional skills in GIS (e.g. problem solving, time management, creativity, critical thinking, ethics), and engaging the GIS and society academic literature. Depending on the quarter, students will pursue individual/group projects of interest or client-based projects. *Prerequisite*: Introduction to GIS (GEOG 2100 or GEOG 3100 or equivalent)

Course learning goals:

1. To learn traditional urban geographic **concepts**, which provide a crucial foundation for thinking about urban problems, through readings, mini-lectures and discussion, and lab exercises.
2. To develop technical **GIS and geographic skills** through lab exercises and a client-based project. Through repeated exposure to geographic and cartographic concepts and GIS software, students become better equipped for more complex GIS tasks and develop their confidence and independence in the GIS environment.
3. To develop **professional skills** (e.g. time-management, problem solving, creativity, effective communication, project management, collaboration), through discussion, lab exercises, and the client-based project.
4. To critically assess the role of **GIS in society** by understanding the 'power' embedded in mapping and geospatial technologies and who has access to, or control over them.
5. To experience how the application of GIS skills and urban concepts can help address particular social issues relevant to Denver-area non-profit organizations by participating in a **service-learning** project.

Textbook:
Greene and Pick. 2012. *Exploring the Urban Community: A GIS Approach*, (**2nd edition ONLY**. Prentice Hall). We will use this book as the basis for urban concepts, as well as labs for beginner/intermediate GIS students.

Class format:
This course is structured around 4 main tasks:

- Gaining urban geographic knowledge
- Skills development through independent lab work
- A service learning client-based project
- GIS & Society: A mini-seminar

The class meets twice a week for 1 hour 50 minutes. Class time will be devoted to mini-lectures and content discussion, individual lab time, group work for the client-based project, and seminar discussion sessions. *Students are expected to remain in the classroom, working on course related material until the end of the period.*

Student Expectations & Grade structure:
There are no graduate students enrolled. All expectations listed here are for undergraduate students. Based on the four course tasks listed above, your grade will be assessed as follows:

- Urban concepts quizzes (3 quizzes x 20pts each) 60 points
- Lab exercises (6 labs x 15pts each) 90 points
- GIS & Society seminar (3 reviews x 10 pts each) 30 points
- Client-based project 150 points
- Reflective Essay 40 points
- Attendance 30 points

A	400 – 376	**C**	307 – 292
A-	375 – 360	**C-**	291 – 280
B+	359 – 348	**D+**	279 – 268
B	347 – 332	**D**	267 – 252
B-	331 – 320	**D-**	251 – 240
C+	319 – 308	**F**	Below 240

Urban concepts: The course textbook readings cover the "traditional content of urban geography"[1]. It is expected all students will read the chapter materials. Key concepts will be discussed through mini-lectures in class. To assess your learning of these concepts, there will be 3 quizzes, which will include any lecture and reading materials, including any additional GIS topics brought up in class.

Lab exercises: This is a lab-oriented course, intended for beginner/intermediate GIS level students. The lab exercises reinforce the urban concepts and enhance individual technical skills in GIS. There are 11 lab exercises in the textbook.

- "The intent of the lab exercises is to have students reinforce their learning of urban concepts and principles by practicing with real-world data and problem solving"
- Each chapter has a Google Earth and ArcGIS lab exercise, covering the same concept. Your lab write-ups should focus on the ArcGIS exercise, but be sure to also explore the Google exercise.
- Each "Lab" that is due consists of 2 chapter exercises, while Lab 6 is chapter 11 only, which takes more time.
  - Lab 1: Ch 1 and 2
  - Lab 2: Ch 3 and 4
  - Lab 3: Ch 5 and 6
  - Lab 4: Ch 7 and 8
  - Lab 5: Ch 9 and 10
  - Lab 6: Ch 11
- As part of student learning, students are responsible to determine necessary changes to each lab that arises due to ArcGIS software updates.
- See calendar for approximate due dates. Submit via Canvas.
- [You may substitute any of the textbook labs for specific GIS-skill oriented labs. Please consult with me.]

[1] (Greene and Pick, 2012, xiii)

Client-based project: To hone our professional and technical GIS skills, we will work on a client-based project throughout the quarter: that is, we will listen to the specific needs of a Denver-area non-profit organization ("client"), and prepare a product tailored to their needs. The class will work on two projects (in 2 separate groups) for different clients. Each group will have unique deliverables for their client. The initial client visits will be Week 2 to learn about their organization and discuss their needs. They will visit again at the end of the quarter (June 1st) for you to present your products. More details are forthcoming.

GIS & Society: A mini-seminar: Broadly speaking, the literature on "GIS and Society" seeks to think critically about how we use GIS, what it is intended for, who is it intended for, and what ethical implications are involved in the power of the mapping technology. Since this course is an "applications" class, it is imperative that we engage some of the important literatures to better grasp some of the societal implications of GIS technologies. While an extensive body of literature exists, in this class we will read only a few. See the selected reading list attached below.

On three occasions we will discuss readings related to this subject in a seminar style. There are three articles or book chapters to read for each session. The reading list is attached at the end of this syllabus. All students are expected to read all of the assigned readings[2]. For each session come prepared with a 2-page critical review of the readings, and ready to engage the discussion. The readings will be available on Canvas.

Logistics:

- Requirements for textbook lab exercises include ArcGIS files and .kmz files. Software needed: ArcGIS 10.x, Google Earth, Microsoft Excel.
- Materials for alternative labs will also be made available.
- Network resources:
    - G:/drive – the "data library"
    - I:/drive - course and tutorial data & documentation
    - Z:/drive - your personal space
- Most lab material is located on the I-drive under the "courses" folder for GEOG 3410.
- Store your materials in a personal storage space (Z-drive file, thumb drive, or a cloud storage service)
- It often may be necessary to work with data on the local computer. Please use the C:/temp folder for this purpose. Always remember to copy any completed materials to a personal storage space

Expectations:

- Be resourceful. As a lab-oriented course, you will likely encounter many obstacles. Please do not view me, your instructor, as a "First Responder" to your difficulties. Keep in mind the many resources available to help figure out problems, including help files, user forums, peers, and trial-and-error. From my own GIS experience, figuring problems out on your own, talking it through with others, or searching forums, has the greatest reward. **Problem solving** is a fundamental skill to be developed in this course.
- **Time management is crucial**! Much of the work in this course is independently driven. Be prepared to spend time outside of class working on the lab exercises as well as the client-based project.
- Though significant amounts of class time are dedicated to individual/group lab work, students and the professor are expected to remain working, in class, until the end of the scheduled class session.
- **Attendance** : Attendance in all class sessions is expected.

[2] To paraphrase Peter Gould, *'geography … students should read widely – and read their heads off!'*

COURSE CALENDAR – SPRING 2015

Week 1: March 23 and 25
- Monday: Course introduction
- Wednesday: Chapter 1: *Urban geography and the spatial display of urban environments*; initial group meetings; client-based projects

Week 2: March 30 and April 1
- Monday: **Service learning client visits** / needs assessment and brainstorming
- Wednesday: Chapter 2: *Defining the metropolis*
- Lab1 due Friday, 5pm

Week 3: April 6 and 8
- Monday: Chapter 3: *The internal structure of cities*
- Wednesday: Seminar #1: ***critical GIS and community GIS***

Week 4: April 13 and 15
- Monday: Chapter 4: *Systems of cities*
- Wednesday: **Quiz #1**
- Lab 2 Due Friday, 5pm

Week 5: April 20 and 22
- Monday: Chapter 5 *Neighborhoods*
- Wednesday: Seminar #2: ***Public Participation GIS & Qualitative GIS***

Week 6: April 27 and April 29
- Monday: Chapter 6 *Migration and residential mobility;*
- Wednesday: Chapter 7 *Race, ethnicity, gender, poverty*
- Lab 3 Due Friday, 5pm

Week 7: May 4 and 6
- Monday: Seminar #3: ***Volunteered geographies / citizen mapping***
- Wednesday: **Quiz #2;** Group updates on service learning client projects

Week 8: May 11 and 13
- Monday: Chapter 8: *Industrial Location*
- Wednesday: Chapter 9: *Urban Core and Edge City Contrasts*
- Lab 4 Due, Friday, 5pm

Week 9: May 18 and 20
- Monday: Chapter 10 & 11: *Environmental Problems; Urban and regional planning*
- Wednesday: **Quiz #3**
- Lab 5 Due, Friday, 5pm

Week 10: May 27
- Monday 5/25: no class *Memorial Day Holiday*
- Wednesday: Practice oral presentations; preliminary draft of deliverables due; Reflective Essay
- Lab 6 Due, Friday, 5pm

Finals Week:
- Monday, June 1: Client Projects **DUE. Oral Presentations & Deliverables**

GIS & SOCIETY: A MINI-SEMINAR
READINGS LIST
SPRING 2015

For each seminar session (see syllabus calendar), read each article (posted on Canvas). Write a 2-page (500 word) critical review of the readings, collectively, and upload to Canvas prior to class. Come to class prepared to actively discuss the readings.

Seminar session #1 *Critical GIS and Community GIS*

1) Crampton, J. W. 2010. What is critical cartography and GIS? In *Mapping: A critical introduction to cartography and GIS*. Chichester, UK: Wiley-Blackwell. Chapter 4.

2) McLafferty, S. 2005. Women and GIS: Geospatial Technologies and Feminist Geographies. *Cartographica: The International Journal for Geographic Information and Geovisualization* 40(4): 37-45.

3) Case, C. & T. Hawthorne. 2013. Served or Unserved? A Site Suitability Analysis of Social Services in Atlanta, Georgia Using Geographic Information Systems. *Applied Geography* 38:96-106.

Seminar session #2 *Public Participation GIS & Qualitative GIS*

1) Boschmann, E. and E. Cubbon. 2014. Sketch maps and qualitative GIS: Using cartographies of individual spatial narratives in geographic research. *The Professional Geographer* 66(2): 236-248.

2) Sieber, R. 2006. Public Participation Geographic Information Systems: A Literature Review and Framework. *Annals of the Association of American Geographers* 96(3): 491-507.

3) Cidell, J. 2010. Content clouds as exploratory qualitative data analysis. *Area* 42(4): 514-523.

Seminar session #3 *volunteered geographies, citizen mapping*

1) Goodchild, M. 2007. Citizens as sensors: The world of volunteered geography *GeoJournal* 69(4):211-221.

2) National Research Council. 2010. What are the societal implications of citizen mapping and mapping citizens? *Understanding the Changing Planet: Strategic Directions for the Geographical Sciences*. Committee on Strategic Directions for the Geographical Sciences in the Next Decade. Washington D.C., National Academies Press. Chapter 11.

3) Select one of the following (or read both!)

   Baginski, J., D. Sui, and E. Malecki. 2014. Exploring the Intraurban Digital Divide Using Online Restaurant Reviews: A Case Study in Franklin County, Ohio. *The Professional Geographer*, 66(3): 443-455.

   Kessler, F. 2011. Volunteered Geographic Information: A Bicycling Enthusiast Perspective. *Cartography and Geographic Information Science*, 38(3): 258-268.