CHRISTOPHER G. PRENER, PH.D.

SYLLABUS

SOC 5650: INTRODUCTION TO GIS
SPRING, 2017
SAINT LOUIS UNIVERSITY

Basics

Course Meeting Times

Tuesdays, 4:20pm to 6:50pm
3600 Morrissey (GeoSRI Lab)

Course Website

https://slu-soc5650.github.io

Chris's Information

Office: 1918 Morrissey Hall
Email: prenercg@slu.edu
GitHub: `@chris-prener`
Slack: `@chris`

Office Hours:

- Tuesdays, 6:50pm to 7:30pm in 3600 Morrissey (GeoSRI Lab)
- Thursdays, 2:30pm to 4:00pm in 3600 Morrissey (GeoSRI Lab) then 4:00pm to 5:00pm in 1918 Morrissey (Office)

Kyle's Information

Email: millerka@slu.edu
GitHub: `@Kmille267`
Slack: `@kyle`

Office Hours:

- Mondays, 2:00pm to 4:00pm in 3600 Morrissey (GeoSRI Lab)
- Tuesdays, 6:50pm to 7:30pm in 3600 Morrissey (GeoSRI Lab)

Course Introduction

[One] cannot understand social life without understanding the arrangements of particular social actors in particular social times and places. . . ***social facts are located****.*
Andrew Abbot (1997)

Course Description

This class introduces both the theoretical and technical skills that constitute the nascent field of Geographic Information Science (GISc). Techniques introduced include data cleaning and management, map production and cartography, and the manipulation of both tabular and spatial data. The impacts of GISc on public policy, and the effects of public policy on GISc, are also discussed. The course incorporates a wide variety of social, economic, health, urban, meteorological, and environmental data. These data are mapped at a variety of extents, from the City of St. Louis to the St. Louis Metropolitan region, Missouri, all United States counties, and all U.S. states.[1]

[1] This course focuses largely on data for the United States, though we do briefly discuss data standards and projection systems for mapping the entire world as well as other countries.

Course Objectives

This course has five intertwined objectives. After completing the course, students will be able to:

1. *Fundamentals of spatial data*: Describe the concepts and theories that form the foundation of GISc.

2. *Fundamentals of data management*: Perform basic data cleaning tasks programmatically using Stata, construct geo-databases using ArcCatalog for data organization and storage, and perform basic manipulations of that data using ArcMap.

3. *Fundamentals of data visualization*: Create and present visualizations of spatial data using ArcMap and Microsoft PowerPoint.

4. *GISc and Public Policy*: Describe the ways in which public entities support GISc research and the ways in which GISc research supports public policy goals.

5. *Spatial research synthesis*: Plan and implement a spatial data analysis project that utilizes the techniques described throughout the course.

Core Resources

There are four core documents and resources for this course. This **Syllabus** sets out core expectations and policies for the course. The **Reading List** contains topics, readings (both required and optional), and assignment due dates for each week. These two documents spell out what is *required* for this course. Both of these course documents are available in the `Core-Documents` repository on GitHub.[2]

The **User's Guide** is a companion document that is written with the aim of helping you be *successful* in this course. The idea behind a course User's Guide is to create a reference for many of the intangible, subtle or disparate skills and ideas that contribute to being a successful researcher. It is designed to be a living document and is therefore available on the course's website.[3]

Finally, we will use GitHub's wiki tool to maintain a **Course Wiki** throughout the semester. I will use this as a place to post weekly jotters that provide links to more information, descriptions of issues that are arising with particular parts of the course, and course related announcements. Our wiki will be associated with the `Core-Documents` repository on GitHub.

[2] GitHub is a website designed for collaboratively working on programming and data analysis projects. It is described briefly below (see page 7) and in more detail in the **User's Guide**.

[3] The url of the website is https://slu-soc5650.github.io. A `.pdf` version of the **User's Guide** is also available for students wishing to download a physical copy.

Readings

There are three books required for this course. Each book has been selected to correspond with one or more of the course objectives. The books are:

1. Brewer, Cynthia. 2015. *Designing Better Maps: A Guide for GIS Users*. Redlands, CA: ESRI Press. ISBN-13: 978-1589484405; List Price: $59.99; ebook versions available.
2. Gorr, Wilpen L. and Kristen S. Kurland. 2013. *GIS Tutorial 1: Basic Workbook*. 10.3.x edition. Redlands, CA: ESRI Press. ISBN-13: 978-1589484566; List Price: $79.99; ebook versions available.[4]

[4] Make sure you purchase this edition and not the 10.1 edition - both are currently offered for sale.

3. Thomas, Christopher and Nancy Humenik-Sappington. 2009. *GIS for Decision Support and Public Policy Making*. Redlands, CA: ESRI Press. ISBN-13: 978-1589482319; List Price: $24.95.

There is one additional book that is optional but highly recommended:[5]

4. Mitchell, Michael N. 2010. *Data Management Using Stata: A Practical Handbook*. College Station, TX: Stata Press. ISBN-13: 978-1597180764; List Price: $48.00.

[5] This is particularly the case for students who have never used Stata before, those who are nervous about Stata's command-based structure, and those who forsee themselves undertaking a quantitative thesis or dissertation.

I do not require students to buy physical copies of texts. You are free to select a means for accessing these texts that meets your budget and learning style. If ebook editions (e.g. Kindle, iBooks, pdf, etc) of texts are available, they are acceptable for this course. All texts should be obtained in the edition noted above.

All readings are listed on the **Reading List** and should be completed before the course meeting on the week in which they are assigned. Full text versions of most readings not found in the books assigned for the course can be obtained using the library's Electronic Reserves system. The password for the Electric Reserves will be posted on Slack at the beginning of the semester.[6]

[6] Slack is a messaging service designed for group communication. It is described briefly below (see page 7) and in more detail in the **User's Guide**.

GitHub

The majority of course content (sample code, documentation, assignments, and some readings) for this course will be made available using **GitHub**.[7] GitHub is a website used by programmers, data analysts, and researchers to share computer code and projects. GitHub will also be used for assignment submission and feedback. In addition to providing us with platform for hosting course content, using GitHub will give you experience in some of the techniques that researchers use to conduct both open-source and collaborative research.

[7] You will need to sign-up for a free GitHub account and then become a member of the SOC 5650 course organization at the beginning of the semester. A complete introduction to GitHub and how we'll use it is provided in the **User's Guide**.

Slack

We will be utilizing the communication service **Slack** to stay in touch.[8] Slack allows me to post announcements and updates about the course that you will receive alerts to. Any changes to our course GitHub repositories will also be posted there automatically. We'll be using Slack to host discussions about the case studies assigned for each week, and to coordinate group work related to the final project. Finally, Slack will provide us with a space to host virtual office hours.

[8] A complete introduction to Slack and how we'll use it is provided in the **User's Guide**.

This allows students to monitor the types of questions and issues that are arising, and learn from each other's experiences.

Software

ArcGIS The primary software platform we will use is the ArcGIS suite of applications. We will focus on learning two of them - ArcCatalog and ArcMap. ArcGIS is available only for Windows. It is available in 3600 Morrissey (GeoSRI Lab) and thus purchasing it is not required for this course. For students who have Windows computers, I will make free student licenses available. Though it is relatively expensive, ArcGIS is the industry standard GIS software application.

Learning GIS techniques in ArcGIS is easier than in other applications like QGIS or R, which both offer (some) similar feature sets. Learning these concepts will position you well to make the jump to either application in the future.[9]

[9] R in particular is the wave of the future. Since it is available for free and exceptionally powerful, many organizations and academics are moving their workflows to R. Another advantage of R is that it can handle a wide variety of GIS applications and is the site of much of the development of cutting edge spatial statistics.

Stata This course uses the statistical software program Stata for editing tabular data. It is available for Windows and macOS. Stata is available in 3600 Morrissey (GeoSRI Lab) and thus purchasing it is not required for this course. However, I recommend purchasing Stata if you foresee yourself completing quantitative research or a quantitative dissertation. It can be purchased by students at a reduced rate through the Stata Corporation's website.[10]

[10] If you buy Stata for yourself, please note that Small Stata will not be sufficient for completing the course; you must use a minimum of Stata/IC to complete coursework.

I use and recommend Stata not because it is easy but because it is powerful. It is an open-platform, meaning that user-written packages are available that extend and expand Stata's base capabilities. We will use this extensibility to create simple maps, for example. Since Stata is designed to operate based on coded commands, it is both powerful and flexible. Learning to program for Stata will position you well not only to conduct reproducible research[11] but also to make the jump to R for both data management, GIS work, and spatial statistics.

[11] One of the mantras of the course; see the **User's Guide** for more details.

Atom You will also need a text editor for this class. One of the best free text editors is Atom. We will use Atom for editing Stata code and for writing in a markup language called Markdown.[12] Markdown is the "official" language for writing documentation on GitHub, and you will use it for formatting written responses to assignments and research files. Writing in simple, open-source documents helps to ensure your work is reproducible and can be opened without issue on (almost) any computer in the future. Once again, we do this not necessarily because it is the easiest approach but be-

[12] Markup languages are used to specify how outputted text will look, as opposed to "what-you-see-is-what-you-get" editors like Microsoft Word that allow you to format your text as you write.

cause it has significant advantages over the long-term. It is available for both Windows and macOS, and can be easily installed on lab computers in 3600 Morrissey (GeoSRI Lab).[13]

[13] Details on setting up Atom and writing in Markdown and are included in the **User's Guide**.

GitHub Desktop You will need another free application called GitHub Desktop (website). This program allows you to easily copy data from GitHub onto your computer. It also makes it easy to upload files like labs and problem sets to GitHub. It is available for both Windows and macOS, and can be easily installed on lab computers in 3600 Morrissey (GeoSRI Lab). [14]

[14] Details on setting up GitHub Desktop are included in the **User's Guide**.

Other Applications In addition to these specialized research tools, we will need a number of standard applications from the Microsoft Office suite. We will use Microsoft PowerPoint for presenting some map documents, and we will use Microsoft Excel for working with some forms of tabular data. Finally, you can optionally install mobile as well as desktop applications for viewing our Slack channels.

Data

I will make most of the required data available on Dropbox[15] in a single `.zip` file.[16] These data should be downloaded and extracted as soon as possible after the start of the semester. The `.zip` file will include data for all textbooks as well as the data for the labs and problem sets. These data are primarily drawn from public data repositories, and will include documentation that describes their provenance and contents. Additional data releases may occur over the course of the semester and will be distributed using the same process.

[15] Dropbox is a cloud storage service. You do not need a Dropbox account to download these data. However, I *highly* recommend obtaining a free account and using Dropbox to store files instead of keeping them stored locally on your computer. This should be one element of your strategy for protecting your work, something which is discussed further in the **User's Guide**.

[16] `.zip` files are compressed file directories. Details on working with these files are included in the **User's Guide**.

Course Expectations and Policies

General Expectations for Students

My priority is that class periods are productive learning experiences for all students. In order to foster this type of productive environment, I ask students to follow a few policies:

1. Arrive to class on time and stay for the entire class period.[17]
2. Silence *all* electronic devices before entering the classroom.
3. Do not engage in side conversations. This is disrespectful to the speaker (whether me or a classmate), and can affect the ability of others in the class to learn.
4. Be respectful of your fellow classmates. Do not interrupt when someone is speaking, monopolize the conversation, or belittle the ideas or opinions of others.
5. Complete the assigned readings for each class in advance, and come prepared with discussion points and questions.

[17] If you drive to campus, please get an on-campus parking pass for the semester or use a smartphone app to top off your meter. Leaving class to feed your meter is disruptive for both you and your classmates.

Attendance and Participation

Attendance and participation are important components of this course since we only meet once a week. Students are expected to attend all class sessions. Making up missed classes are your responsibility. Please email me if you will be missing class so that we can touch base about any assignments, and make sure to obtain notes from a classmate. I do post slides to GitHub, but my slides are intended only to serve as references. Please note that lectures and discussions cannot be recorded by any means (e.g. audio or video recordings, or photographs) without my permission.

Communication

Slack[18] and email are my preferred methods of communication.

[18] More details about Slack and instructions for how to use it are available in the **User's Guide**.

I am on Slack during workday hours, though I may be "away" during meetings and while I teach my other class. I also may have limited availability on Mondays, a day that I am not typically on-campus. I will also monitor Slack during weekday evening hours and will respond to messages if I am able. Likewise, I dedicate time to email responses each workday, meaning that my response time is typically within 24 hours during the workweek. Please use your SLU email account when emailing me.

For both email and Slack, if you have not received a response from me after 48 hours (or by end of business on Monday if you messaged me over the weekend), please follow-up to ensure that your message did not get lost in the shuffle.

Kyle, our course's TA, is also available on both Slack and email. In general, you should expect responses from Kyle within 24 hours during the workweek and by Monday afternoon if you send him a message over the weekend. Please remember, however, that being our course TA is not his full-time job and that other coursework responsibilities may increase the amount of time it takes him to respond to emails and Slack messages.

All messages regarding course updates, assignments, and changes to the class schedule, including cancellations, will be posted on the `_news` channel in Slack. Changes to the class schedule, including cancellations, will also sent to your SLU email account. It is imperative that you check both Slack and your SLU email account regularly.

Please also ensure that all concerns or questions about your standing in the course are directed to me immediately. Inquires from parents, SLU staff members, and others will not be honored.

Electronic Devices

During class periods, students are asked to refrain from using electronic devices (including cell phones) for activities not directly related to the course. For this class, I expect students to limit their use of electronic devices to accessing course software, readings, and notes.

There is evidence that using electronic devices during lectures results in decreased retention of course content [19] and lower overall course performance.[20] Students who are not using a laptop but are in direct view of another student's laptop also have decreased performance in courses.[21] Conversely, students who take notes the "old fashioned way" have better performance on tests compared to students who take notes on laptops.[22]

I therefore ask students to be conscious of how they are using their

[19] Hembrooke, Helene and Geri Gay. 2003. "The Laptop and the Lecture: The Effects of Multitasking in Learning Environments". *Journal of Computing in Higher Education* 5(1): 46-64.

[20] Fried, Carrie. 2008. "In-class laptop use and its effects on student learning". *Computers & Education* 50(3): 906-914.

[21] Sana, Faria et al. 2013. "Laptop Multitasking Hinders Classroom Learning for Both Users and Nearby Peers". *Computers & Education* 62: 24-31.

[22] Mueller, Pam and Daniel Oppenheimer. 2014. "The Pen Is Mightier Than the Keyboard Advantages of Longhand Over Laptop Note Taking". *Psychological Science* 25(6): 1159-1168.

devices, the ways such use impacts their own learning, and the effect that it may have on others around them. I reserve the right to alter this policy if electronic device use becomes problematic during the semester.

Student Support

If you meet the eligibility requirements for **academic accommodations** through the Disability Services office (located within the Student Success Center), you should arrange to discuss your needs with me after the first class. All discussions of this nature are treated confidentially, and I will make every effort to work with you to come up with a plan for successfully completing the course requirements. Please note that I will not provide accommodations to students who are not working with Disability Services.[23]

If you are a **student-athlete** who is in-season, you should discuss your game schedule with me after the first class and share your travel letter with me as soon as you have a copy. You are reminded that games and tournaments are not excuses for failing to complete assignments, and that NCAA rules prohibit student-athletes from missing classes for practice. Low grades that jeopardize eligibility must be addressed immediately by you, not by a coach or academic coordinator.[24]

I also encourage you to take advantage of the **University Writing Services (UWS) program**. Getting feedback benefits writers at all skill levels and the quality of your writing will be reflected in assignment grades. The UWS has trained writing consultants who can help you improve the quality of your written work. UWS's consultants are available to address everything from brainstorming and developing ideas to crafting strong sentences and documenting sources.[25]

[23] Additional details can be found on the Disability Services website. You can contact them at disability_services@slu.edu or 314-977-3484 to schedule an appointment.

[24] More information about resources and academic support for student-athletes can be found at the Student-Athlete Academic Support Services website.

[25] More information on the UWS program can be found on their website. The UWS program has a number of on-campus locations.

Academic Honesty

All students should familiarize themselves with Saint Louis University's policies concerning cheating, plagiarism, and other academically dishonest practices:[26]

[26] This course is also governed by the College of Arts and Sciences' academic honesty policies, which are available on their website.

Academic integrity is honest, truthful and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care, and community service via which SLU embodies its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern.

Any work that is taken from another student, copied from printed material, or copied the internet without proper citation is expressly prohibited. Note that this includes all computer code written for class assignments - each student is expected to author and de-bug their own code.[27] All assignments should include in-text citations and references formatted using the American Sociological Association style guidelines. Any student who is found to have been academically dishonest in their work risks failing both the assignment and this course.

[27] See the **User's Guide** for details on collaboration with your colleagues.

Title IX

All students should familiarize themselves with Saint Louis University's polices on bias, discrimination, and harassment:

Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g. sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you to report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member must notify SLU's Title IX coordinator, Anna R. Kratky (DuBourg Hall, Room 36; akratky@slu.edu); 314-977-3886) and share the basic facts of your experience with her. The Title IX coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.

If you wish to speak with a confidential source, you may contact the counselors at the University Counseling Center at 314-977-TALK.

Course Assignments and Grading

Assignments

Attendance and Participation (10%) As discussed above, both attendance and participation are important aspects of this class. The class participation grade will be based on (a) attendance, (b) level of engagement during lectures and labs, (c) level of engagement on Slack, and (d) occasional class "entry" and "exit tickets". Detailed instructions for Slack participation will be provided in the `Assignments` repository on GitHub.

- SOC 5650 *only*
  Your participation grade will also include an assessment of the class discussion you lead on a selection of maps from *GIS for Decision Support and Public Policy Making* (2009). These discussions are tied to the fourth course objective and will focus on the policy implications of the maps, the data that they use, and their design. I will lead the first few weeks' discussions to model my expectations for this aspect of the course. Detailed instructions as well as a grading rubric will be provided in the `Assignments` repository on GitHub.

Lab Exercises (10%) Each course meeting will include time dedicated to practicing the techniques and applying the theories described during the day's lecture. There will be a total of sixteen lab exercises over the course of the semester, each of which is worth approximately 0.63% of your final grade. These exercises will give you an opportunity to practice skills that correspond with the first three course objectives.[28] Lab exercises will build upon each other, meaning that they will increase in complexity each week.

It is imperative that you keep up with these exercises and seek out help from myself or your colleagues if you have questions about the course materials. Lab exercises are graded simply for completion. Exercise documents will be available in the weekly repositories on GitHub and will detail the deliverables to be submitted to demon-

[28] Think of labs as a low-stakes opportunity to practice specific skills. Their scope will be more limited in comparison to the corresponding week's problem set. My expectations for the design of labs' map layouts will be similarly diminished.

strate completion of the assignment. Replication files will be posted in the weekly repositories on GitHub and will illustrate my approach to each exercise.

Lab exercises will be completed in small workgroups, though each student is expected to turn in the required deliverables. We will assign students to workgroups and may shuffle their composition over the course of the semester. Completing a lab entails not just successfully submitting the required deliverables but also actively contributing to the group discussions that help to produce them.

Problem Sets (30%) There will be a total of ten problem sets over the course of the semester, each of which is worth 3% of your final grade. Problem sets will require students to draw on a variety of skills, including basic GISc concepts, the cleaning and manipulating of data using Stata and ArcGIS, and the design of maps using ArcGIS. They are designed to assess your progress with the first three course objectives.[29]

[29] Unlike lab exercises, you should expect problem sets to be more complex and to draw upon previous weeks' skills in a broader way.

Like lab exercises, problem sets will build upon each other. As with labs, students must ensure that they are keeping up with these assignments. Problem set documents will be available in the weekly repositories on GitHub and will detail the deliverables to be submitted to demonstrate completion of the assignment. They will also include a simple rubric describing how each problem set is evaluated.[30] Replication files will be posted on GitHub in the `PSReplications` repository that illustrate my approach to each exercise once all students have submitted their problem sets.

[30] A key aspect of these assignments is not only demonstrating comfort with a particular set of GIS and data skills, but also demonstrating and evolution in your design skills as well. The weight given the your map layouts will increase as the semester progresses.

Final Paper and Presentation (35%) For the final assignment, students will identify a social phenomena of interest from a dataset of City of St. Louis Citizens' Service Bureau (CSB)[31] requests for service. This project will require students to draw on a variety of GISc techniques including data cleaning, database construction, GIS visualization, and data presentation. It corresponds with the fifth and final course objective.

[31] The CSB is equivalent to many cities' 3-1-1 services, which are non-emergency ways for residents to communicate issues to the appropriate authorities.

- All Students
  Students should perform an initial assessment of the CSB data and identify a group of categories they wish to map and analyze. Students will be expected to create a research poster that: (1) describes their topic, (2) provides some background on it, (3) includes a set of demographic maps, and (4) include maps of their selected phenomenon. Posters will conclude with a section describing the inferences drawn from the data visualizations. While students will complete posters individually, they will be assigned work-groups for collaborating on the initial dataset construction

steps. Detailed instructions as well as a grading rubric will be provided in the `Assignments` repository on GitHub and we will talk about this project in class as the semester progresses.

Students will be required to submit a brief memo (worth 5%) identifying their topic in class on **February 21st**. A draft poster mockup will be due in class on **April 11th** that will only be graded for submission (-2.5% if not submitted). The posters will be due at the class's final exam period on **May 9th**, when you will briefly present your findings to your classmates.[32]

[32] Since this is during our finals week session, we will meet from 4:00pm to 5:50pm that evening.

Be advised that the poster represents an added cost to this course. Posters can be printed for $0.80/inch (about $29 for the size needed for this assignment) in the Instructional Media Center, located in the lower level of the Xavier Hall Annex.

- SOC 4650 *only*
  The poster will be worth 30% of your final grade.

- SOC 5650 *only*
  In addition to the poster, students are expected to complete a final paper that: (1) describes their topic, (2) provides some background on it, (3) includes a thorough literature review of the social science on their topic, and (4) includes a Data and Methods section describing the GISc techniques used in their analysis. Papers will conclude with (5) an extended discussion of the inferences drawn from the data visualizations presented on the poster. An annotated bibliography is due in class on **March 21st** and is worth 5% of your final grade. A draft paper will be due in class on **April 11th** that will only be graded for submission (-2.5% if not submitted). The paper will be due along with your poster on **May 9th**. The paper and the poster will each be worth 12.5% of your final grade. Detailed instructions as well as a grading rubric will be provided in the `Assignments` repository on GitHub and I will set aside a specific time period towards the end of the semester for us to discuss this specific assignment.

Quizzes (15%) Three short quizzes covering Geographic Information Science theories and concepts will be given throughout the semester. These quizzes will focus on assessing the first and fourth course objectives as well as key concepts and terms from the second and third course objectives. Each will constitute 5% of your final grade. Quizzes will be given on the following schedule: Quiz 1 on **February 21st**, Quiz 2 on **March 28th**, and Quiz 3 on **May 2nd**.

Submission and Late Work

Copies of all assignment materials (some combination of maps, written responses, and code) should be uploaded to your private assignments repository on GitHub[33] before class on the day that the assignments are due.

[33] See the **User's Guide** for additional details about submitting assignments.

Once the class begins, any assignments submitted will be treated as late. Assignments handed in within 24-hours of the beginning of class will have 25% deducted from the grade. After the 24-hour mark, I will continue to deduct 15% per day for each day they are late. If you cannot attend class because of personal illness, a family issue, jury duty, an athletic match, or a religious observance, you must contact me beforehand to discuss alternate submission of work.

These same policies cover missed quizzes - you may only take a quiz at an alternate time for one of the aforementioned reasons and you must speak with me before the quiz date to schedule a makeup quiz. Failure to do so will result in a "0". Please note that non-emergent travel plans are not considered valid reasons for missing an quiz or an assignment submission.

Extra Credit

From time to time I may offer extra credit to be applied to your final grade. I will only offer extra credit if it is open to the entire class (typically for something like attending a lecture or event on-campus). If I offer extra credit, I will typically require you to submit a short written summary of the activity within a week of the event to obtain the credit. When offered, extra credit opportunities cannot be made-up or substituted if you are unable to attend the event.

Grading

Grades will be included with assignment feedback, which will be disseminated through Github's 'Issues' tool.[34] At midterms and finals, I will upload a summary of all assignment grades to a new 'Issue' on GitHub.[35]

[34] See the **User's Guide** for additional details about receiving feedback and grades assignments.

[35] If you would like a summary of your grades at any other point, please let me know and I will furnish you with a copy of all current grades.

I use a point system for calculating grades. The following table gives the weighting and final point totals for all assignments for this course:

Grading Point System

Assignment	Weight	Points	Qty.	Total
Attendance	10%	100 pts	x1	100 pts
Labs	10%	6.25 pts	x16	100 pts
Problem Sets	30%	30 pts	x10	300 pts
Final Project	35%	350 pts	x1	350 pts
Quizzes	15%	50 pts	x3	150 pts
Total	100%			1,000 pts

All feedback will include grades that represent number of points earned. If you want to know your percentage on a particular assignment, divide the number of points earned by the number of points possible and then multiply it by 100.

Final grades will be calculated by taking the sum of all points earned and dividing it by the total number of points possible (1,000). This will be multiplied by 100 and then converted to a letter grade using the following table:

Final Grading Scale

Grade Point	Letter	Percentage
4.0	A	93.0-100
3.7	A-	90.0-92.9
3.3	B+	87.0-89.9
3.0	B	83.0-86.9
2.7	B-	80.0-82.9
2.3	C+	77.0-79.9
2.0	C	73.0-76.9
1.7	C-	70.0-72.9
1.0	D	63.0-69.9
0.0	F	< 63.0

Borderline grades (e.g. 89.9%) will not be rounded up, so please do not ask. No chances will be given for revisions of poor grades. Incomplete grades will be given upon request only if you have a "C" average and have completed at least two-thirds of the assignments. You should note that incomplete grades must be rectified by the specified deadline or they convert to an "F".

Course Schedule

Course Overview

Week	Dates	Topics
1	January 17th	Course Introduction
2	January 24th	Working with Data (Part 1)
3	January 31st	The Nature of Spatial Data (Part 1)
4	February 7th	The Nature of Spatial Data (Part 2)
5	February 14th	Cartographic Design
6	February 21st	GIS Outputs
7	February 28th	Geodatabases
8	March 7th	Spatial Joins
9	March 14th	Demographic Data
10	March 21st	Working with Projections
11	March 28th	Geoprocessing (Part 1)
12	April 4th	Working with Data (Part 2)
13	April 11th	Geoprocessing (Part 2)
14	April 18th	Digitizing Data
15	April 25th	Geocoding Data
16	May 2nd	Spatial Analyses & Course Wrap-up
17	May 9th	Finals Week - Presentations

Planned Online Lectures

This semester, we have one class that falls on official university holidays: Spring Break (Week 9, **March 14th**). This week will have materials assigned for it, which will include a lecture posted on YouTube. These lecture will be shorter than typical in-class lectures. Students should view this lecture during that week and complete the associated readings and lab exercises. A link to the video for each lecture will be sent out ahead of time.

Reading List

Please consult the stand-alone **Reading List** document for details on readings and assignments for each week.[36]

[36] All course documents including the **Reading List** are available in the `Core-Documents` repository on GitHub.

Class Progression

Each week will be broken down roughly the same way. Class will begin with any relevant "follow-up" from the previous weeks and relevant announcements. We will then segue into a short discussion about the assigned case study from *GIS for Decision Support and Public Policy Making* (2009). After our mapping discussion, we will segue into a discussion of either a data management topic or a cartography topic. For cartography weeks, this will include a discussion of a chapter from Brewer (2015). We will then take an in-depth look at a particular set of GIS techniques. Most classes will end with time dedicated to working through the lab exercise.

For weeks when we have a quiz, the quiz will be begin at 4:20pm. Students will have until 4:50pm to complete the quiz. We will then begin the lecture at 5:00pm. If you finish early and want to leave class, the expectation is that you will be back in class for the beginning of the lecture. Please make sure that you arrive on-time for these class sessions as arriving late will only shorten the amount of time you have to complete the quiz. If you believe that you will arrive late, you must let me know before class starts so that we can work out a makeup plan.

Scheduling Notes

The weekly schedule may change as it depends on the progress of the class. However, you must keep up with the reading assignments. In the event of a cancellation due to weather or another disruption, I may alter the weekly schedule.

Since this course only meets once per week, cancellations are particularly disruptive. I will make every effort to schedule make-up classes at a time that works for at least a portion of the class. These class sessions will be recorded and made immediately available using YouTube for students who are unable to attend the make-up class. All students will be responsible for either attending the make-up class or watching the lecture as well as completing all readings, lab assignments, and problem sets for make-up classes.