

**San José State University**  
**College of Social Sciences/Geography Department**  
**Geog. 171, Advanced GIS, Sections 1 & 2, Spring 2019**

<b>Instructor:</b>	Maureen Kelley, PhD
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<b>Office Hours:</b>	Washington Square Hall 113 Mondays & Wednesdays 1400 to 1430, & by appointment
<b>Lecture Classroom:</b>	Washington Square Hall 113
<b>Lecture Days &amp; Time</b>	Wednesdays 1700 to 1845
<b>Lab Classroom:</b>	Washington Square Hall 113
<b>Lab Days &amp; Time:</b>	Wednesdays 1900 to 2145
<b>Prerequisites:</b>	Geography 1 & Geography 170, or instructor consent

### **Course Format**

This course will be taught as a lecture and laboratory course. Active participation by all students in both sections is essential to passing this course. Course laboratory exercises, a geographic information systems (GIS) Internet mapping/software review, graded participation, and a semester-length project will be used as a basis for grading. Lecture slides and laboratory assignment submissions will be on on the Canvas website for Geography 171/G282.

### **Course Description**

*Maps as tools of geographic expression and research. Introduction to spatial analysis through geographic information systems. Data collection and description; measuring absolute and relative location, patterns, interaction and association.*

This course is the second in a one-year sequence that teaches students the foundations of mapping and geographic information science (GISci). Lectures are used to lay the theoretical foundations of the mapping sciences, laboratory exercises are used to provide the student fundamental GIS skills, and the project provides students the opportunity to design, perform background research, and implement a GIS project.

### **Course Learning Outcomes (CLO)**

Upon successful completion of this course, students will be able to:

1. develop the ability to read and interpret map and GIS displays
2. measure and model spatial data in two- and three-dimensions

3. use locational insights to solve simulated real-world analytical problems and make choices among alternatives
4. Integrate theory/science with technology to design, implement and present a GIS project.

## Required Texts/Readings

### Required Textbook

Jensen, J. R., & Jensen, R. R. (2013). *Introductory geographic information systems*. Boston: Pearson Educational.

The textbook's print addition ISBN number is 978-0-13-614776-3 and is available through Spartan Bookstore, Barnes and Noble, Vital Source, and Amazon.com for rent or purchase.

### Required Readings

Broussard, M.. (2019, January 22). Why paper maps still matter in the digital age. *The Conversation*. Retrieved from <https://theconversation.com/why-paper-maps-still-matter-in-the-digital-age-105341>

Other readings will become available via Canvas email system one week in advance of the week's topic.

### Other equipment/material requirements

- ArcGIS10.6 for Desktop or ArcPro 2.x (optional)
- Microsoft Office (student version available)
- Adobe Creative Suite utilizing Acrobat Reader (available as Adobe Creative Cloud for students)
- external USB flash drive

Computer Internet access is essential for accessing materials and uploading assignments on Canvas. All assignments must be submitted and uploaded to Canvas in Adobe portable document format (.pdf) or Microsoft Word Document format (.doc) unless otherwise specified.

## Library Liaisons

The geography liaison at Martin Luther King Jr. library is Nyle Monday. He can be reached at [nyle.monday@sjsu.edu](mailto:nyle.monday@sjsu.edu). The data services liaison at the library is Kate Barron ([kate.barron@sjsu.edu](mailto:kate.barron@sjsu.edu)).

Please become acquainted with the Library's Finding Data & Statistics website at <https://libguides.sjsu.edu/c.php?g=595729&p=4121467>.

## Course Requirements and Assignments

Please review University policies regarding syllabi at:

- [University Syllabus Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) at <http://www.sjsu.edu/senate/docs/S16-9.pdf>.
- Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) <http://www.sjsu.edu/gup/syllabusinfo/>

“Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.”

University policy F69–24 at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

## **Methods**

The course will involve a combination of lectures, discussions and participation, one Internet GIS software review, laboratory exercises, and a semester-length project for grade determination. You should read the assigned sections of the textbook and readings prior to the week in which they are discussed. The lectures and discussions will expand on the materials from the readings. Discussions will involve all members of the class because you will be evaluated on participation. Laboratory exercises will cover a range of GIS analysis techniques and one map interpretation exercise. You should also keep up with the lab assignments because they are designed to build your knowledge in incremental steps.

## **Laboratory Exercises**

Nine formal exercises involving the fundamentals of GISci, spatial analysis, and production will be assigned for the laboratory section and the total is worth 50% of your grade (500 points). Each exercise is due at the beginning of the laboratory section when a new exercise is distributed.

## **Class Participation**

Plan to attend all class meetings. Active participation is a vital element of the course. This not only makes the class more interesting and enjoyable, but you are responsible for material discussed during class and you cannot earn an “A” without participating. Your class participation grade will include contributing to Canvas discussions and in-class exercises.

Quality participation also includes reading weekly assignments prior to attending class, volunteering information and ideas to discussions, asking and answering questions, and being an active participant on Canvas. The majority of the participation points are earned by posting the answers on Canvas via text entry or contributing to the Discussion, please use the course Canvas website to determine if there are new discussions or participation assignments. The questions will be posted on the Canvas website on the Discussion board for each day’s class discussion. Class participation is worth 100 points, 10% of your final grade, which 10 points out of the 100 points will be calculated based on your Canvas activities from the past two weeks (Canvas interaction score).

The Canvas interaction score (maximum 10 points) will be weighted based on the median score of all students in the class:

Bi-weekly Weighted Score = Page Views + Participation + (Submissions + On-time Submissions – Late Submissions – Missing Submissions).

## **Internet GIS Software Review**

There will be a summary and review of an Internet GIS software or mapping website. The review will involve finding an Internet website that is an on-line mapping and analysis application or a website that has geospatial data for downloads, writing a brief summary of the capabilities and usefulness of the website, a brief “how-to manual” for other students to navigate the site, and submitting the summary to the Canvas website for other students’ viewing. All students are required to read, critique, and write comments as a separate assignment. The review is worth 100 points and 10% of the final grade.

## **Final Project**

You will produce a final project of your choice using techniques learned during the semester, and the project is worth 300 points total and 30% of your final grade. The final project will involve designing a GIS project,

conducting appropriate literature reviews, obtaining spatial data, integrating the data in a GIS, performing appropriate geospatial analysis, and presenting your work.

Your final project must be approved prior to commencing. Students will be required to submit an informal one-page initial project proposal and a formal proposal by the tenth week of the semester. Students are also required to conduct literature research in the appropriate study area and present their findings in an annotated bibliography and a literature review chapter in their formal proposal; undergraduate students are required to use at least one peer-reviewed article and graduate students must use a minimum of three peer-reviewed articles.

All students are required to present their completed project in any accepted and prearranged medium (poster, digital map, application, and so forth) as well as an oral presentation to the class during the final exam period. There will be a five-minute presentation on the project on the day of the final.

## Grading Information

This course must be passed with a C or better as a Geography department graduation requirement.

**Correct use of English is a fundamental requirement for your assignments to be graded.** If a minimum of 20 errors in spelling, syntax, grammar, or technical errors are detected, then there is an automatic 10% reduction in grade for formally written documents (annotated bibliography and formal proposal). Grading rubrics are on the Canvas website.

**Formal academic writing guidelines are essential for this course.** Please upload your assignments as either an MSWord document (.doc) or Portable Document File (.pdf) only unless otherwise specified. All raster graphics should be submitted as a portable network graphic (.png).

All assignments must be written using formal academic writing styles conforming to standard guidelines unless otherwise specified:

- lastname first initial\_course number\_assignment number (ie kelleym\_G171\_lab1.dfooc)
- Times New Roman 12pt normal font for text; Arial or Helvetica 12pt normal font for data
- double line spacing for all text
- 1" margin all around
- APA citation method
  - cover page for annotated bibliography and formal proposal
  - running head for annotated bibliography and formal proposal
  - reference page (formal proposal only)
  - page numbers
  - use proper headings and enumeration styles
- Use style sheets and formatting styles—style sheets are your friends!
- DO NOT add your student name/class/date heading on your assignments because the file name and date stamp on Canvas provides me with this information
- Also, do not include questions or prompts on assignments

If any of the above standards are not adhered to, then for each violation of a major bullet point a reduced Purdue Owl General Formatting of 0.1 point will be assessed from your total score. Refer to the [Purdue Owl General Format](#) webpage for formal writing guidelines.

I am your target audience. Therefore, I expect a formal tone from your essays: **no breezy style** and **no contractions**. If any of the previously mentioned styles are used, then they will be counted as an error of syntax and/or grammar. Refer to the [Purdue Owl Levels of Formality](#) webpage for more information.

Remember, the first 20 errors will be counted and an overall 10% reduction will be assessed on your assignment. Therefore, it is vital that you proofread your paper before you submit!

## Determination of Grades

A strong performance in all areas of assessment is necessary to achieve the highest grade in this course. You will not be graded on attendance. However, it is not possible to do well if you are not present in class to join in discussions and complete the laboratory exercises.

It is your responsibility to inform me in advance if you know you must miss a class for a valid reason. Excused absences refer to illness, family responsibilities, and similar necessities. Exceptions to these policies will be made only in the case of officially documented emergencies. Contact me regarding emergencies as soon as possible—before an assignment is due rather than after it is already late—so special arrangements may be made.

## Grade Breakdown

Assignments	Points	Percent
Exercises (9)	500	50
Software review	100	10
Participation	100	10
Project	300	30
<b>Total</b>	<b>1000</b>	<b>100</b>

## Letter Grades: Percentage Ranges & Point Ranges

Letter Grade	Percent Range	Points Range	Letter Grade	Percent Range	Points Range
A+	93.00% to 100.00%	970.0 to 1000.0	C+	77.00% to 79.99%	770.0 to 799.9
A	93.00% to 96.99%	930.0 to 969.9	C	73.00% to 76.99%	730.0 to 769.9
A-	90.00% to 92.99%	900.0 to 929.9	C-	70.00% to 72.99%	700.0 to 729.9
B+	87.00% to 89.99%	870.0 to 899.9	D+	67.00% to 69.99%	670.0 to 699.9
B	83.00% to 86.99%	830.0 to 869.9	D	63.00% to 66.99%	630.0 to 669.9
B-	80.00% to 82.99%	800.0 to 829.9	D-	60.00% to 62.99%	600.0 to 629.9
			F	0.00% to 59.99%	0.00 to 599.9

## Late or Missing Work

Late assignments will be reduced 2% of the total of the assignment for each calendar day missed. No late assignments will be accepted after the last full day of instruction.

## Extra Credit

To be determined.

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See University Policy F13-1 at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

## **Classroom Protocol**

We all want to be in a positive learning environment. Course content can be challenging. I expect everyone to be respectful of opinions, other students, and the instructor. I will make every effort to be prepared for class, start and end class on time, turn back assignments in a timely manner, and be available during my office hours for help.

I expect my students to be prepared for class, come to class on time, and turn in assignments on time. I expect all students to refrain from reading non-course-related materials during class. The use of any personal communication devices during class time is not allowed. Please show common courtesy to your fellow classmates—turn off cell phones, pagers, i-Pods, and so forth. Please refer to the Students Rights and Responsibilities Academic Policy at <http://www.sjsu.edu/senate/docs/S16-15.pdf>.

## **University Policies**

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at <http://www.sjsu.edu/gup/syllabusinfo/>"

## **Computer Use**

You may use computers in the classroom only for class-related activities. These include activities such as taking notes on the current lecture, following the lecture on web-based slides that the instructor has posted, and finding websites to which the instructor directs students at the time of the lecture. Students using computers for other activities will be asked to refrain from that use and, at a maximum, will be referred to the Judicial Affairs Officer of the University for disrupting the course (such referral can lead to suspension from the University). Please show common courtesy to your instructor and fellow classmates and refrain from surfing the web or other non-course-related activities.

## **Geography Technology Laboratory Policies and Procedures**

***Eating and drinking are prohibited in WSQ 113.*** Eating and drinking are allowed in WSQ 111. Please clean up after yourself when using lab materials such as maps and graphic materials. Given that the lab is communal and there are a limited number of computers, priority is for students who are assigned for their specific lab time. Please be courteous to other students and lab instructors while in the lab.

Keep your work on your flash drive and do not manipulate the system in any inappropriate manner (changing backgrounds, viewing inappropriate websites, downloading or installing applications without permission, changing passwords, and other obnoxious computer hacks). Please inform the lab instructors of any computer-related problems—do not try to fix the problems yourself. There are no printing facilities in the lab so plan accordingly.

USB flash drives and external hard drives are allowed but must be scanned prior to lab use. All computers have antivirus software running. Please be wise and scan for viruses!

Please email me via Canvas mail system a picture of great white shark to show that you have read the document and understand the content.

## Geog. 171: Advanced GIS Spring 2019, Lecture Schedule

*The course schedule is subject to change with fair notice and notifications will be sent out via Canvas or classroom postings.*

Week	Date	Topics & Readings	Assignments	Due
1	01/30	Introductions Review Chapters 1 (Introduction to GIS) & 2 (Georeferencing)		
2	02/05	LAST DAY TO DROP WITHOUT GRADE		
2	02/06	Cartography (Chapter 10)	Proposal 1 Internet Software Review 1	
3	02/12	LAST DAY TO ADD		
3	02/13	Review Chapter 3 (Data Collection, p. 55–76) Remote Sensing (Chapter 3 p. 76–102)	Annotated Bibliography	
4	02/20	Data Quality (Chapter 4)		
5	02/27	Data Models (Chapter 5)	Draft Data Dictionary	Proposal 1
6	03/06	Review Chapter 8 (Statistics & Spatial Measurements, p. 223–240) Spatial Statistics & Point Pattern Analysis (Chapter 8, p. 240–252)	Proposal 2	
7	03/13	Vector Analysis (Chapter 9, p. 149–165)		Annotated Bibliography
8	03/20	Raster Analysis (Chapter 9, p. 165–191)		Internet Software Review 1
9	03/27	Network Analysis (Chapter 7)		Draft Data Dictionary
10	04/03	SPRING BREAK		
11	04/10	Topographic Map Reading (USGS handouts) 3D Analysis (Chapter 9)		Proposal 2
12	04/17	Hardware/Software (Chapter 11, p. 321–331)		
13	04/24	GIS Programming (Chapter 11, p. 331–335, ESRI handout)		Project Progress Report
14	05/01	GIS Integration (Chapter 12)		Internet Software Review 2
15	05/08	Final Thoughts & Wrap-Up		
Final Exam	05/15	PROJECT PRESENTATIONS WSQ113 1715 to 1930		Project Presentation
	05/21			Final Data Dictionary & Project

## Geog. 171: Advanced GIS Spring 2019, Lab Schedule

*The course schedule is subject to change with fair notice and notifications will be sent out via Canvas or classroom postings.*

<b>Week</b>	<b>Date</b>	<b>Activities</b>	<b>Assignments</b>	<b>Due</b>
1	01/30	Introduction to the Geospatial Laboratory	Prelab Quiz	
2	02/05	LAST DAY TO DROP WITHOUT GRADE		
2	02/06	Historical maps at SJSU Geography	Lab 1: Cartography	Prelab Quiz
3	02/12	LAST DAY TO ADD		
3	02/13	Remote Sensing	Lab 2: Remote Sensing	Lab 1
4	02/20	Data Quality		
5	02/27	Data Models & Queries	Lab 3: Queries	Lab 2
6	03/06	Spatial Statistics, Autocorrelation, & Point Pattern Analysis	Lab 4: Spatial Statistics	
7	03/13	Vector Analysis	Lab 5: Vector Analysis	Lab 3
8	03/20	Raster Analysis	Lab 6: Raster Analysis	Lab 4
9	03/27	Network Analysis	Lab 7: Network Analysis	Lab 5
10	04/03	SPRING BREAK		
11	04/10	Topographic Map Reading & 3D Analysis	Lab 8: 3D Analysis	Lab 6
12	04/17			Lab 7
13	04/24	GIS Programming	Lab 9: ArcModeler	Lab 8
14	05/01			
15	05/08	OPEN LAB		Lab 9
Exam	05/15	PROJECT PRESENTATIONS WSQ113 1715 to 1930		Project