

**San José State University**  
**College of Social Sciences/Geography Department**  
**Geog. 170, Introduction to Maps & GIS, Sections 1 & 2, Fall 2016**

<b>Instructor:</b>	Maureen Kelley, PhD
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<b>Office Hours:</b>	Mondays 1100 to 1130, Wednesdays 1400 to 1500, & by appointment in Washington Square Hall 113
<b>Lecture &amp; Lab Classroom:</b>	Washington Square Hall 113
<b>Lecture Days &amp; Time</b>	Mondays 1500 to 1645
<b>Lab Days &amp; Time:</b>	Mondays 1700 to 1945
<b>Prerequisites:</b>	Geography 1: Physical Geography 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, two exams, a geographic information systems (GIS) case study, graded participation, and a final project will be used as a basis for grading. Lecture slides and laboratory assignment submissions will be submitted on the Canvas website at

- <https://sjsu.instructure.com/courses/1207445> for lectures
- <https://sjsu.instructure.com/courses/1212988> for laboratory

### **Course Description**

*Foundations of the mapping sciences and geographic information systems and science. Basics of earth measurement, location, and mapping. Thematic map display, and analysis. Application through a variety of laboratory exercises.*

This course introduces students to the foundations of mapping and geographic information science (GISci). Lectures are used to lay the theoretical foundations of the mapping sciences, and laboratory exercises are used to give the student the fundamental tools to build a geographic information system (GIS) project.

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

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

1. obtain an understanding of the basic principles and concepts of mapping and geographic information systems and science

2. be able to understand and use locational information
3. be able to construct a thematic map using a geographic information system
4. understand how geographic information systems can be used to solve a variety of problems related to spatial patterns

## **Required Texts/Readings**

### **Required Textbook**

Kimerling, A. J., Buckley, A. R., Muehrcke, P. C., & Muehrcke, J. O. (2012). *Map use: Reading analysis & interpretation, 7<sup>th</sup> ed.* Redlands, CA: Esri Press.

The textbook's ISBN number is 978-1-58948-279-1 and is available through the Spartan Bookstore, Barnes and Noble, and Amazon.com for rent or purchase. The textbook is also available for purchase only at Esri Press.

### **Readings**

Longley, P. A., Goodchild, M. F, Maguire, D. J., & Rhind, D. W. (2015). *Geographic information science and systems.* Hoboken, NJ: John Wiley & Sons.

The readings will be available on the Canvas website as softcopy only. Interested students who wish to purchase or rent the inordinately expensive textbook can do so at Amazon.com. The ISBN number is 978-1-118-67695-0. The textbook is also available as an eTextbook at VitalSource.com.

### **Recommended Laboratory Textbook**

Gorr, W. L. & Kurland, K. S. (2016). *GIS tutorial 1: Basic workbook, 10.3x ed.* Redlands, CA: Esri Press.

The textbook's ISBN number is 978-1-58948-456-6 and is available through the Spartan Bookstore, Barnes and Noble, and Amazon.com for rent or purchase. The textbook is also available for purchase only at Esri Press.

### **Other equipment / material requirements**

- Microsoft Office (student version available) or Apache OpenOffice
- Adobe Creative Suite utilizing Acrobat Reader (available as Adobe Creative Cloud for students)

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 or .docx).

### **Library Liaison**

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).

### **Course Requirements and Assignments**

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per

week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12–3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

[University policy F69–24](http://www.sjsu.edu/senate/docs/F69-24.pdf) 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, two take home examinations, one case study research paper, laboratory exercises, and a final 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 map reading, interpretation, and introductory geographic information system (GIS) techniques. We will have one field exercise that will be difficult to make up. You should also keep up with the lab assignment because they are designed to build your knowledge in incremental steps.

## **Laboratory Exercises**

Ten exercises involving map reading and interpretation as well as GIS production will be assigned for the laboratory section and the total is worth 40% of your grade (500 points). Each exercise is due at the beginning of the laboratory section when a new exercise is distributed.

The first five exercises will be on the foundational geographic and map reading and interpretation core group: Exercise 1: Earth geometry & spherical coordinates; Exercise 2: Map scales; Exercise 3: Datums & projections; Exercise 4: Map reading coordinates; Exercise 5A: Map reading distance & direction; Exercise 5B: Distance & direction in the field. The last five exercises will cover the GIS exercise group: Exercise 5C: Getting field data in Arc; Exercise 6: Thematic mapping; Exercise 7: Building a geodatabase and joining tabular data to spatial data; Exercise 8: Digitizing; Exercise 9: Geocoding; Exercise 10: Geoprocessing.

## **Examinations**

There will be two take-home examinations and are worth 16% of your total grade (100 points and 8% each). The first exam will consist of two parts: Part 1 will be a take-home map reading exam, and Part 2 will be where each student will be required to answer two of four questions regarding the mapping sciences such as projections. The second exam will have students answer three of five questions regarding geographic information systems and science. Students will have two weeks to complete the take-home exams. There will be no makeup examinations unless for serious and compelling reasons.

## **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 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 emailing me

the answers to questions posed each class session. 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, 8% of your final grade.

### **Case Study**

There will be one two-to-three-page write-up on a topic of your choosing regarding a real-world scenario GIS project that has been published in a trade journal or magazine (undergraduate students) or a peer-reviewed journal (graduate students). The case study will involve finding an article describing a GIS project, writing a brief summary, and submitting the case study to the Canvas website for other students' viewing. All students are required to read, critique, and write comments in the discussion section. The case study is worth 200 points and 16% 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 20% of your final grade. The final project will involve obtaining spatial data and integrating the data in a GIS. Your final project must be approved prior to commencing. Undergraduate students will be required to submit an informal one-page project proposal; whereas, graduate students will be required to submit a two to three-page formal proposal by the sixth week of the semester. By the tenth week of the semester, all students are required to submit a project outline. All students are required to present their completed project to the class during the final exam period. There will be a five to ten-minute presentation on your final project on the day of the final as well as a brief write-up that is due on the last day of final exam week. All final projects will be in the format as a mounted document and will be displayed outside the geography rooms in Washington Square Hall for a period of three months to six months.

### **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 errors in English make it difficult for a grader to understand your sentences, or excessively slow down the grader to mark your technical errors; then your examinations and case study assignment will be returned to you for further work on its English, and your grade for the paper will be deferred until it is resubmitted with corrected English.

I am your target audience. Therefore, I expect a formal tone from your essays: no breezy style and **no contractions** (Please refer to the Purdue Owl's webpage on the appropriate use of language at <https://owl.english.purdue.edu/owl/resource/608/01/>). If any of the previously mentioned styles are used, then they will be counted as an error of syntax and/or grammar. An excess of nine errors per assignment will warrant a 10% reduction. The first ten identified errors in spelling, syntax, and grammar will be noted on your document. Therefore, it is up to you to proofread your assignment prior to submission.

This instructor follows the American Psychological Association (APA) formatting and style guidelines; therefore, if you must cite sources please conform to APA guidelines. The Purdue Owl APA Guidelines at <https://owl.english.purdue.edu/owl/resource/560/01/> is a useful resource for general information.

If you have any questions regarding formatting and style forms, then please feel free to ask me after class or email me.

All assignments should be submitted as soft copy documents as a Microsoft Word file format (.doc, .docx) or an Adobe portable document format (.pdf) file only. Examinations and the case study, as well as formal project proposal for graduate students, must be written using formal academic writing styles conforming to these guidelines:

1. lastname first initial\_course number\_assignment number (ie kelley\_m\_G170\_L1.doc )
2. Times New Roman 12pt normal font
3. double line spacing
4. 1" margin all around
5. No student/class/date heading on your paper (see file name above)
6. Proper numbering formats without question prompts

If any of the above standards are not adhered to, then there will be a 0.1 point reduction for each violation from above.

If your assignments are rejected for an excessive number of errors, you will be allowed to rewrite and resubmit said document within two weeks from the original due date. After the two weeks of the my initial grading period, all assignments will be considered final. If you did not take advantage of the redo, then the final grading stands—all detected errors will be downgraded accordingly. See the Canvas webpage for more information.

### **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 (10)	500	40
Exams (2)	200	16
Case study (1)	200	16
Participation	100	8
Final project	250	20
<b>Total</b>	<b>1250</b>	<b>100</b>

## Letter Grades: Percentage Ranges & Point Ranges

Letter Grade	Percent Range	Points Range	Letter Grade	Percent Range	Points Range
A+	97.00 to 100.00	1212.50 to 1250.00	C+	77.00 to 79.99	962.50 to 999.99
A	93.00 to 96.99	1162.50 to 1212.49	C	73.00 to 76.99	912.50 to 962.49
A-	90.00 to 92.99	1125.00 to 1162.49	C-	70.00 to 72.99	875.00 to 912.49
B+	87.00 to 89.99	1087.50 to 1124.99	D+	67.00 to 69.99	837.50 to 874.99
B	83.00 to 86.99	1037.50 to 1087.49	D	63.00 to 66.99	787.50 to 837.49
B-	80.00 to 82.99	1000.00 to 1037.49	D-	60.00 to 62.99	750.00 to 787.49
			F	0.00 to 59.99	0.00 to 749.99

## Late or Missing Work

Late assignments will be reduced 1% of the total of the assignment for each calendar day missed (one class session missed equals 7% reduction in grade). No late assignments will be accepted after the last full day of instruction.

## Extra Credit

Twenty points extra credit will be accepted for participating in this year's Mapathon during Geography Awareness Week's GIS day.

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 their computers for other activities will be asked to leave the class 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).

## **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 in your own folder in [c:/users/students](#) 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. Printing documents should be done judiciously and sparingly.

USB flash drives are allowed but must be scanned prior to lab use. All computers have Malware Bytes and Sophos running. Please be wise and scan for viruses!

## Geog. 170: Intro. to Mapping & GIS Fall 2016, Course 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	08/29	<i>Topic:</i> Introduction & Overview	
2	09/05	LABOR DAY	
3	09/12	<i>Topic:</i> Earth Geometry & spherical coordinates <i>Readings:</i> Chs. 1 & 22 (Kimerling, et al., 2012); Ch. 1 (Longley, et al., 2015)	
4	09/19	<i>Topic:</i> Scale and Generalization <i>Readings:</i> Ch. 2 (Kimerling, et al., 2012); Ch. 2 (33–39) (Longley, et al., 2015)	
5	09/26	<i>Topic:</i> Map Projections <i>Readings:</i> Ch. 3 (Kimerling, et al., 2012)	
6	10/03	<i>Topic:</i> Coordinate & Partitioning Systems <i>Readings:</i> Chs. 4, 5, 21 (459–468) (Kimerling, et al., 2012)	Project Proposal I
7	10/10	<i>Topic:</i> Map Accuracy & Distance finding <i>Readings:</i> Ch. 10 & 11 (Kimerling, et al., 2012)	
8	10/17	<i>Topic:</i> Directions and Navigation <i>Readings:</i> Ch. 12 (Kimerling, et al., 2012)	
9	10/24	<i>Topic:</i> Distance & Positioning <i>Readings:</i> Chs. 13 & 14 (Kimerling, et al., 2012)	
10	10/31	<i>Topic:</i> Representing geographic features <i>Readings:</i> Ch. 3 (Longley, et al., 2015) <b>Exam 1</b>	Project Outline
11	11/07	<i>Topic:</i> Qualitative and Quantitative Information <i>Readings:</i> Chs. 7, 8, 21 (469–480) (Kimerling, et al., 2012); Ch. 11: Cartography & map production (237-248) (Longley, et al., 2015)	
12	11//14	<i>Topic:</i> Geographic data structures <i>Readings:</i> Chs. 7 & 9 (194–206) (Longley, et al., 2015)	Exam 1
13	11/21	<i>Topic:</i> Geodata collection & manipulation <i>Readings:</i> Ch. 8 (Longley, et al., 2015)	
14	11/28	<i>Topic:</i> Georeferencing <i>Readings:</i> Ch. 4 (77–85, 95–98) (Longley, et al., 2015)	Case study
15	12/05	<i>Topic:</i> Spatial analysis <i>Readings:</i> Ch. 13 (Longley, et al., 2015)	
16	12/12	<b>Exam 2</b>	
Final Exam	12/19	PROJECT PRESENTATIONS 1215–1430 WSQ113	Exam 2

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*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>Due</b>
1	08/29	Introduction to the Lab Pre-exercise 1	
2	09/05	LABOR DAY	
3	09/12	Basic Earth Geometry	
4	09/19	Scale and Generalization	Lab. 1
5	09/26	Map Projections	Lab. 2
6	10/03	Location and Partitioning Systems	Lab. 3
7	10/10		
8	10/17	Map reading distances	Lab. 4
9	10/24	Distances & directions in the field	Lab. 5A
10	10/31	Getting your data into ArcGIS	Lab. 5B
11	11/07	Qualitative and Quantitative mapping	Lab. 5C
12	11//14	Creating a geodatabase; Joining tabular data to spatial data	Lab. 6
13	11/21	Digitizing	Lab. 7
14	11/28	Geocoding	Lab. 8
15	12/05	Spatial Analysis	Lab. 9
16	12/12	<i>Final Projects</i>	Lab. 10
Final Exam	12/19	PROJECT PRESENTATIONS 1215–1430 WSQ113	Exam 2