

San José State University
College of Social Sciences/Geography Department
Geog. 171, Advanced GIS, Sections 1 & 2, Spring 2020

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Office Hours:	Mondays 1730 to 1830 - Washington Square Hall 113A
Lecture Days & Time:	Wednesdays 1700 to 1845
Lecture Classroom:	Washington Square Hall 111
Lab Days & Time:	Wednesdays 1900 to 2145
Lab Classroom:	Washington Square Hall 113
Prerequisites:	Geography 170: or; Advisor or Instructor consent

Course Format

This course will be taught as mostly a laboratory course. Course lectures will discuss the topic to be covered in the associated lab exercise or assignment. Active participation by all students in either section is essential to passing this course. Eight laboratory exercises, two exams, an area of interest paper, a GIS professional interview paper, a semester (final) project, and participation will be used as a basis for grading.

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.” (<http://info.sjsu.edu/web-dbgen/catalog/courses/GEOG171.html>)

Course Learning Outcomes (CLO)

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

1. Understand ArcMap, ArcGIS Pro, ArcGIS Online software; as well as different types of GIS projects
2. Learn and understand the basics of GIS Data and GIS Databases and resulting Maps
3. Learn, understand and complete GIS task automation using *SQL* queries, *Arcade*, *Model Builder*, and *Python* scripting

4. Learn the basics of Google Map and other web-mapping APIs, including *JavaScript*, and *HTML* code
5. Learn and understand the basics of Spatial Statistics and the use of the *Spatial Analyst Tool*

Texts/Readings

- **Textbooks**

- (none required)

- **Supplemental Readings**

- Supplemental readings and activities (mostly tutorials and videos) will be distributed as the semester progresses at class meetings and via Canvas course page.

- **Optional Laboratory Textbook(s)**

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 Amazon.com for rent or purchase. The textbook is also available for purchase at Esri Press.

- **Other equipment / material requirements**

- ArcMap 10.X – computers in lab will use 10.7
- ArcGIS Online Organizational Account (via SJSU)
- Flash Drive – or other storage device or mechanism (e.g. Dropbox)

Computer internet access is essential for accessing materials and uploading assignments on Canvas or submitting via email.

Strongly consider a *lap-top computer* that can run ArcGIS/ArcMap and can be brought to class for your use, and creating a work environment that is more portable for you.

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 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.”

Course Methods

The course will involve a combination of discussions and lab exercises, two examinations, one area of interest paper, a GIS Professional interview paper and 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 geographic information system (GIS) techniques. You should also keep up with the lab assignments because they are designed to build your knowledge in incremental steps, cross-reference data and lab results, and will help you complete the semester project.

Laboratory Exercises

Eight exercises will be assigned for the laboratory section and the total is worth 50% of your grade (500 points).

Examinations

There will be two examinations that are worth 20% of your total grade (200 points at 10% of grade for each exam). The first exam will cover material learned to date regarding lab exercises 1-4. The second exam will cover items in remaining lab exercises. 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. Your class participation will include contributing to discussions and in-class exercises or assisting other students in learning/mastering content.

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. Observations of your participation will be considered and potentially used to determine borderline grades

Area of Interest Paper

There will be a three to four-page assignment in which you will declare your *Area of Interest* in GIS and review current techniques and trends in this area. You will be asked to refer to this throughout the semester as you complete the laboratory exercises – and will present your work at the end of the semester. *

GIS-P Interview Paper

There will be a three to four-page assignment in which you will interview a GIS professional – preferably in your area of interest (but not necessary) and report on a standard set of questions that you will ask as part of the interview.

Semester Project/Presentation*

You will present a semester project based on your declared area of interest (from Area of Interest Paper assignment) using techniques learned during the semester. The project is worth 10% of your final grade. However, you will be asked to also report on or complete portions of this semester project as part of the ongoing laboratory exercises and course assignments.

Extra Credit

TBD

Grading Information

This course must be passed with a C or better as a Geography department graduation requirement. Requirements for Graduate Students may differ.

Correct use of English and proper formatting/style are fundamental requirements for your written 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. There should be a formal tone from your writing when expected: 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 class will follow 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.

When required as such, assignments should be submitted as soft copy documents as a Microsoft Word file format (.doc, .docx) or an Adobe portable document format (.pdf) file using the following formatting guidelines.

1. lastname first initial _course number _assignment number (i.e.:
HarmonW_G171_AreaOfInterest.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)

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 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 or course assignments for requirements and 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, software demonstrations, obtain materials and complete

the laboratory exercises. Once again, your participation will be considered and potentially used to determine borderline grades

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 (8)	500	50
Exams (2)	200	20
Area of Interest Assignment	100	10
GIS Professional Interview	100	10
Semester Project	100	10
Participation	TBD	TBD
Total	1000	100

Letter Grades: Percentage Ranges & Point Ranges

Letter Grade	Percent Range	Points Range	Letter Grade	Percent Range	Points Range
A+	97.00 to 100.00	970 to 1000	C+	77.00 to 79.99	770 to 800
A	93.00 to 96.99	930 to 970	C	73.00 to 76.99	730 to 770
A-	90.00 to 92.99	900 to 930	C-	70.00 to 72.99	700 to 730
B+	87.00 to 89.99	870 to 900	D+	67.00 to 69.99	670 to 700
B	83.00 to 86.99	830 to 870	D	63.00 to 66.99	630 to 670
B-	80.00 to 82.99	800 to 830	D-	60.00 to 62.99	600 to 630
			F	0.00 to 59.99	< 600

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.

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

1. Please feel free to talk with me about class materials, readings, or any difficulties you may have regarding the class. I am usually available after class and office hours are available; or you can schedule an appointment with me. **If you are having problems, please communicate with me.**
2. You are expected to participate in class by asking questions, attending class, and showing up on time (you will be tested on materials that are given and will be advised of any schedule changes at each class session), and finally, respect the instructor, guests, and other students in the classroom.
3. Take notes from your readings and outside coursework. This is a good time to consider questions you might ask or how you might investigate solutions to technical problems you may encounter. You are expected to show up to class so that you can remain aware of schedule changes and exam information. The majority of course content will come from lectures, labs, and course activities.
4. Penultimate rules of classroom courtesy – what **not** to do:
 - read non-course materials during class;
 - work on or study non-course material during class;
 - talk with your classmates while another student, the instructor or guests are speaking;
 - use electronic games or music during class;
 - bring nasty food or drink to class;
 - use your cell phone during class for calling or *texting*, *etc.* ... this is very distracting. Please leave it off if not using the device to support class efforts.
 - sleep

The first time you are doing one of the above, you will be asked to stop. The second time, you will be asked to leave the classroom. The next time it occurs, you will eventually be encouraged to drop or be dropped from the class. **Let’s not do this.**

5. The work you submit must be your own. Plagiarism, representing the work of others as your own, is immoral, illegal, and absolutely against University rules. It can result in dismissal from the University. This can also be the result of cheating on a test or tricking or bullying other students to do your work for you.

<http://www.engr.sjsu.edu/fclegg/AcadInteg.htm>

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/>”

Geography Technology Laboratory Policies and Procedures

Computer Use

You may use computers in the classroom for class-related activities only. These include activities such as taking notes on the current lecture, following the lectures on web-based slides that the instructor has posted, following demonstrations, and finding websites to which the instructor directs students toward. 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).

Eating and drinking are prohibited in WSQ 113. Eating and drinking are, however, allowed in WSQ 111 and will be open for such uses when lab is in session. 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.

When using lab computers please 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 computer hacks). **However, be reminded that computers will automatically clean and wipe material when it is shut off.** It will be your responsibility to keep working files in appropriate places – (i.e. flash drives, personal computers, or cloud storage applications). Please inform the lab instructors of any computer-related problems—do not try to fix the problems yourself. If necessary, printing documents should be done judiciously and sparingly.

Geog. 171: Advanced GIS
Spring 2020, Course Content 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/Exercises	Notes
1	01/29	Introduction to Class Lab 1: ArcGIS Software Review	
2	02/05	Lab 2: Creating and Managing Geodatabases - 2	
3	02/12	Area of Interest Assignment	
4	02/19	Lab 3: Using ArcGIS Online	
5	02/26		
6	03/04	Lab 4: Automating Map Production: Creating Map Books (Data Driven Pages)	
7	03/11	Lab 5: Automating GIS Production: Using Model Builder	
8	03/18	Exam 1 GIS Professional Interview Assignment	
9	03/25	Lab 6: Automating GIS Production: Using Python	
10	04/01	Spring Break	
11	04/08	Lab 7: Creating Google Map Apps: Introduction to <i>Google Maps API</i> and <i>Leaflet</i>	
12	04/15		
13	04/22	Lab 8: Spatial Analysis/Spatial Statistics	
14	04/29		
15	05/06	Exam 2 Open Lab	
16	05/13	PROJECT PRESENTATIONS 1715–1930 WSQ113 http://info.sjsu.edu/static/catalog/final-exam-schedule-spring.html	