San José State University
College of Social Sciences, Geography Department
Course # 20958 & 20959, GEOG 171 – Mapping and Geographic Information Systems Analysis, Spring 2015

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Office Hours:	Wednesday 3:30-4:30 pm and by appointment
Class & Lab Days/Time:	Wednesday 4:30-6:20 pm (Lecture), 6:30-9:20 pm (Lab)
Classroom & Labs:	WSQ 111

Canvas

All course resources can be found on our GEOG 171 Canvas webpage after you log into using your 9-digit SJSU ID and password. You are responsible for regularly checking this website for the latest information and communication. Please log in and follow the 'Getting Started' steps.

Course Description

(From Course Catalog) 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. Prerequisite: GEOG 1, GEOG 170 or instructor consent. (3 units)

Course Learning Objectives

This course applies analytical mapping techniques using Geographic Information Systems to better understand and make decisions about place. You will continue learning how to apply the leading software technology in the field of GIS: ESRI, but also be introduced to open-source alternatives. This class is designed to explain concepts, science and theory behind locational information as well as provide practical hands-on experience and by the end of this class you will have mastered geoprocessing skills to complete a spatial analysis GIS project.

Course Learning Outcomes (CLO)

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

- CLO1 *Develop your ability to read and interpret maps and GIS displays.*

  Students will demonstrate understanding through laboratory exercises and written examinations.

- CLO2 *Measure, model and analyze spatial data in 2D and 3D.*

  Students will demonstrate skilled techniques through laboratory exercises and written exams.

- CLO3 *Use locational insights to solve simulated real-world analytical problems and make choices among alternatives.*

  Students will demonstrate logic and rationale through laboratory exercises and the GIS in Action presentation.

- CLO4 *Integrate theory/science with technology to design, implement and present a GIS project.*

  Students will demonstrate achievement by preparing, plotting and orally presenting a term research paper and poster.

Required Texts/Readings

Textbook

Required: *Geographic Information Systems Tutorial 2 (for ArcGIS 10.1)* by David W. Allen is our required textbook this term.

Optional Readings: *Getting Started with Geographic Information Systems*, by Keith Clarke, Prentice Hall (available on reserve in the library) and *Fundamentals of Geographic Information Systems, 3rd Edition* by Michael N. DeMers, John Wiley & Sons, 2005.

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 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Grading Policy

Students will be scored on quizzes, exams, lab exercises, and a GIS project with presented research poster. Graduate students will be required to complete an additional presentation and take home essay.

- There will be two *Exams* given during the term. Part A of both Exams includes multiple-choice, matching, true/false, short answer, fill-in the blank, and data interpretation questions. Part B of both Exams includes a mapping exercise requiring each student to demonstrate appropriate GIS techniques, tools, and manual steps required to answer a real-world scientific situational problem. Textbook and lecture material comprising exams will not be cumulative. All exams will be closed book.
- *Mapping exercises* will be completed during lab time. Skills introduced build on each other weekly and must be used in your term poster.
- A 15-minute *GIS in Action* presentation will be given by each student using PowerPoint, Keynote or Prezi software.
- The *Research Paper, Poster & Presentation* is a significant opportunity to independently design and implement a GIS project of interest to you. You will be turning on a written paper discussing the techniques, tools, and methodologies used and will be presenting your final poster in class.

	Points Possible
Research Proposal	25
Research Bibliography	30
Exam 1 Part A: Ch 1-5	100
Exam 1 Part B: Mapping	50
Lab Exercises (15 points each)	90
GIS in Action Presentation	75
Exam 2 Part A: Ch 6-9	100
Exam 2 Part B: Mapping	50
Research Paper	50
Research Poster	100
Research Poster Presentation	30
TOTAL	**700**

Classroom Protocol

- Assigned chapter *readings* from the textbook must be completed prior to scheduled lectures for active participation in classroom lectures and discussions.
- I will be presenting material in lectures and labs that may not be available, or clear, in the textbook for which you are responsible on exams so *on-time arrival and good attendance is vital.* You are responsible for finding out what you missed should you be absent or tardy; refer to the course Canvas page for materials and/or handouts covered during class.
- *Exams* must be taken on their scheduled dates. Make-ups will only be allowed under extreme circumstances. In case of an emergency, e-mail me as soon as possible.
- All *assignments* are due as stated on the Course Schedule and late work will NOT be accepted.
- Multiple preparatory *mapping exercises* will be completed during laboratory time. There are NO make-up opportunities as all lab exercises must be printed and handed in within one week after their start date.

In addition to course specific protocols, students are expected to:

- Be civil and courteous to one another. While we may not always agree with other perspectives and opinions, classroom respect is mandatory.
- Silence all mobile devices (phones and tablets) and keep them out of reach and view.
- Use laptops/tablets for note taking responsibly. If you are caught browsing the Internet or Social Media outlets during class I will ask you to stop using your device for the remainder of the semester.
- Save all your work (lab exercises, quizzes, projects, and exams) until after you have checked your final course grade. Then if you have questions about your final grade, you can bring in past work, and if necessary, corrections can be made.

GRADE SCALE:

A+ = ≥97%	**A** = 94-96%	**A-** = 90-93%
B+ = 87-89%	**B** = 84-86%	**B-** = 80-83%
C+ = 77-79%	**C** = 74-76%	**C-** = 70-73%
D+ = 67-69%	**D** = 60-66%	**D-** = 51-59%
		F = ≤50%

University Policies

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, and should be aware of the current deadlines and penalties for dropping classes. Refer to the current semester's Catalog Policies. Add/drop deadlines can be found on the Academic Calendars webpage with further explanation in the Late Drop Policy. Information about the latest changes and news is available at the Advising Hub

Consent for Recording of Class and Public Sharing of Instructor Material

University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor's permission to record the course:

- "Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material."
- "Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent."

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University's Academic Integrity policy S07-2 requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. Information is available at the Student Conduct and Ethical Development website.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Integrity Policy S07-2 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) to establish a record of their disability.

Accommodation to Students' Religious Holidays

San José State University shall provide accommodation on any graded class work or activities for students wishing to observe religious holidays when such observances require students to be absent from class. It is the responsibility of the student to inform the instructor, in writing, about such holidays before the add deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent. It is the responsibility of the instructor to make every reasonable effort to honor the student request without penalty, and of the student to make up the work missed. See University Policy S14-7 at http://www.sjsu.edu/senate/docs/S14-7.pdf.

Student Technology Resources

You will have access to laboratory computers with specialized mapping software. However, additional computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available but will likely not have the software necessary for labs. Computers are also available in the Martin Luther King Library.

SJSU Peer Connections

Peer Connections, a campus-wide resource for mentoring and tutoring, strives to inspire students to develop their potential as independent learners while they learn to successfully navigate through their university experience. You are encouraged to take advantage of their services which include course-content based tutoring, enhanced study and time

management skills, more effective critical thinking strategies, decision making and problem-solving abilities, and campus resource referrals.

In addition to offering small group, individual, and drop-in tutoring for a number of undergraduate courses, consultation with mentors is available on a drop-in or by appointment basis. Workshops are offered on a wide variety of relevant topics such as improving your learning and memory, and alleviating procrastination. A computer lab and study spaces are also available for student use in Room 600 of Student Services Center (SSC).

Peer Connections is located in three locations: SSC, Room 600 (10th Street Garage on the corner of 10th and San Fernando Street), at the 1st floor entrance of Clark Hall, and in the Living Learning Center (LLC) in Campus Village Housing Building B. Visit Peer Connections for more information.

SJSU Writing Center

The SJSU Writing Center is located in Clark Hall, Suite 126. All Writing Specialists have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to become better writers. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the Writing Center website. For additional resources and updated information, follow the Writing Center on Twitter and become a fan of the SJSU Writing Center on Facebook. (Note: You need to have a QR Reader to scan this code.)

SJSU Counseling Services

The SJSU Counseling Services is located on the corner of 7th Street and San Fernando Street, in Room 201, Administration Building. Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit Counseling Services website at http://www.sjsu.edu/counseling.

GEOG 171 – Mapping & GIS Analysis, Spring 2015 Course Schedule

All chapters referenced below correspond to the assigned *GIS Tutorial 2* textbook. Readings are to be completed prior to subject lecture dates. Please note this schedule *is* subject to change given fair notice, so please refer to Canvas for latest information. Any changes will also be announced at the beginning of class.

Course Schedule

Week	Date	Topics, Assignments, Deadlines
1	1/28 Lecture 1/28 Lab	Intro, Syllabus, Research Project Description, Canvas Principal Investigators and Managing Projects Review Ch 9: Spatial Analysis (from *GIS Tutorial 1* text) Getting Started
2	2/4 Lecture 2/4 Lab	Go Over Research Proposal Assignment Ch 1: Mapping Where Things Are Exercise #1 – Building a Geodatabase
3	2/11 Lecture 2/11 Lab	Ch 2: Mapping the Most and Least Assessing Research Posters on Campus Guest Speaker
4	2/18 Lecture 2/18 Lab	**RESEARCH PROPOSALS DUE** Ch 3: Mapping Density Exercise #2 Cont. - Geoprocessing
5	2/25 Lecture 2/25 Lab	Ch 4: Finding What's Inside Exercise #3 – Spatial Testing, Data Prep, Autocorrelation Exam Review
6	3/4 Lecture 3/4 Lab	**EXAM 1 – Part A (Chapters 1-4)** **EXAM 1 – Part B (Mapping Exam)**
7	3/11 Lecture 3/11 Lab	Ch 6: Mapping Change Exercise #4 – Hotspot & Regression Analysis
8	3/18 Lecture 3/18 Lab	Go over Research Bibliography Assignment Ch 7: Measuring Geographic Distribution Exercise #4 Cont. - Hotspot & Regression Analysis
9	3/25	NO CLASS – SPRING BREAK
10	4/1 Lecture 4/1 Lab	GIS in Action Presentations GIS in Action Presentations
11	4/8 Lecture 4/8 Lab	**RESEARCH BIBLIOGRAPHY DUE** Ch 8: Analyzing Patterns Exercise #5 – Customize User Interface
12	4/15 Lecture 4/15 Lab	Ch 9: Identifying Clusters Exercise #6 - Geostatistics Exam Review

Week	Date	Topics, Assignments, Deadlines
13	4/22	CLASS CANCELED FOR AAG CONFERENCE LAB CANCELLED FOR AAG CONFERENCE Start Research Project Independently
14	4/29 Lecture 4/29 Lab	**EXAM 2 – Part A (Chapters 5-9)** **EXAM 2 – Part B (Mapping Exam)**
15	5/6 Lecture 5/6 Lab	Continue Research Project Continue Research Project
16	5/13 Lecture 5/13 Lab	**RESEARCH PAPER DUE** Paper Peer Review Plot draft posters for peer review, make edits
Finals Week	Wed 5/20 @ 5:15-7:30pm	**RESEARCH POSTER PRESENTATIONS** **FINAL RESEARCH POSTER DUE**

GIS IN ACTION PRESENTATION

Each student will present in front of the class for 15-minutes on a GIS application of particular interest to him/her. The goal is to introduce other students to the varied nature of projects and interdisciplinary range of today's GIS users. Examples of topics might include urban planning, life and environmental sciences, anthropology, archeology, forensics, geology/mining, oceanography, etc.

RESEARCH PROJECT, POSTER & PRESENTATION

Your primary objective is to demonstrate theoretical and conceptual GIS understanding by applying newly acquired technical skills learned in lab to address a scientific research question of your choosing. Your project should highlight you ability to:

- Present compelling and easily understandable graphics
- Locate and acquire external data
- Edit and create data and metadata
- Conduct basic geoprocessing steps
- Use model builder
- Have both rater and vector applications

Students are expected to incorporate four or more laboratory skills.

Project Products

To keep you researching your project all term you will be required to submit a one-page typed RESEARCH PROPOSAL describing how you will attempt to address your chosen spatial analysis question, and why you find this to be interesting. Then include a bulleted list outlining all anticipated data you will need to construct this GIS project.

Shortly thereafter you will turn in a RESEARCH BIBLIOGRAPHY containing no fewer than 10 citations in any proper format (APA, MLA, or Chicago style) – 8 of these must be sources from peer-reviewed academic journals. All peer-reviewed journal sources must include a copy of the article's abstract. Remaining sources should be scientifically sound, but may be geared toward popular readers or the general public (examples include *Scientific American, ArcUser,* or *National Geographic*).

The RESEARCH PAPER component allows for collegiate writing and peer review practice. First, be sure to organize and summarize existing literature on the topic, then state your objective, followed by a detailed step-by-step methodology for your complete GIS analysis, ending with discussions/conclusions about what you found through investigation and any missteps encountered along the way that might be avoided upon redo. To avoid plagiarism reference ALL sources used. These must be credited in text AND in a bibliography at the end of your paper (APA, MLA, or Chicago styles are all acceptable formats). Most papers will be 20-double spaced pages excluding maps, graphics and figures.

The RESEARCH POSTER is a tangible product of your applied GIS skills. It should measure 36"x48" and will be graded on content, clarity and flow. Have you provided all obvious information on your poster? Will a casual observer understand your findings upon quick review? Can a careful reader ask informed questions from just seeing your poster? Successful posters provide research statements, methods, results, and conclusions in addition to listing a title, abstract, and author. Once you have these concise well-written sections complete then ask yourself about the sequence presented - how can you aid or lead

a poster observer through your material graphically. Did your data come across clear and was it eye-catching, and most importantly were your maps/graphics/text readable from 3-feet away. A good rule of thumb is to always keep it simple – so be selective in what you include on your poster!

Lastly, you will be expected to participate in an open RESEARCH POSTER PRESENTATION session with your classmates during the scheduled final exam time. Individually, you will provide a brief 5-minute overview of your stated objective and results that will be followed by a question and answer period with the instructor and classmates.