

San José State University
College of Social Sciences, Department of Geography & Global Studies
#27472, GEOG290 – Seminar in Research Design for Geographic Information
Science, Spring, 2017

Course and Contact Information

Instructor:	Kerry Rohrmeier, Ph.D.
Office Location:	Washington Square Hall (WSQ) 111-E
Telephone:	(408) 924-5497, but email yields fastest response
Email:	kerry.rohrmeier@sjsu.edu
Office Hours:	Tuesdays 4:00-6:00 pm, and by appointment
Class Days/Time:	Online, plus four instructor meetings
Classroom:	Online (Canvas)
Prerequisite	Graduate student status, Instructor Consent

Course Format

Online Course

With the exception of instructor meetings, either in person or video chat, this course is taught entirely online. Students need internet connection and specialized software to participate in class activities. Please let me know if you need an ESRI ArcGIS 10.5 license.

MYSJSU

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](http://sjsu.instructure.com) at <http://sjsu.instructure.com>. You are responsible for regularly checking with the course management system through [MySJSU](http://my.sjsu.edu) at <http://my.sjsu.edu> to learn of any updates via announcements.

Course Description

University Catalog: Introduction to research in geographic information science. Includes definitions of research problems, design of research project, identification of appropriate methods for acquiring, organizing and analyzing data, and presentation of research results. Research paper. (3-units)

Course Learning Outcomes (CLO)

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

- CLO 1 *Demonstrate the ability to define a research problem and design and execute a research program.*

All course assignments plus the final paper require independent sourcing, reading, and analytical techniques to support each geography graduate student's self-selected research problem and program. The final paper is customized to each student so that his/her work effort is applicable to his/her own graduate study.

- CLO 2 *Demonstrate the ability to communicate research results in written, graphic, and verbal form.*
Students will present their specific research through written assignments, presentations, and display charts, graphs, and maps each week.
- CLO 3 *Demonstrate understanding of how GIS and technology may be applied to a variety of problems.*
ArcGIS, and open source alternatives, are spatial analyses and geostatistical tools used for problem solving are included in this course.

Required Texts/Readings

Textbook

No textbook is required for this course. Weekly content will be posted in the Canvas 'files' tab or linked to the course schedule.

Supplemental Texts to Use as Reference Throughout Your Graduate Research Experience

- Firebaugh, G. 2008. *Seven Rules for Social Research*. Princeton, NJ: Princeton University Press.
- Gatrell, J., G. Bierly, and R. Jensen. 2012. *Research Design and Proposal Writing in Spatial Science, 2nd Edition*. Berlin: Springer-Verlag.
- Montello, D. and P. Sutton. 2013. *An Introduction to Scientific Research Methods in Geography & Environmental Studies, 2nd Edition*. Thousand Oaks: Sage.

Technology Requirements

ArcGIS 10.4 or later is required for this course. Students must download a recent software version, and if needed can email me for a free 1-year free educational license code.

Library Liaison

You can seek assistance from Nyle Monday in the MLK library at nyle.monday@sjsu.edu or (408) 808-2041.

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected 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 forth.

- 1) A minimum of two instructor check-ins are mandatory over the term given the online format. This may be in person during office hours, or in short scheduled video chats. This will ensure students are progressing in this course, and may be scheduled as guidance or clarification is needed (CLO3).
- 2) There are 12 assignments ranging from preparing an annotated bibliography, synthesizing a research question, designing appropriate research methods, and working with GIS and graphics software in an effort to support progress in each student's specific research path (CLO1 and CLO2).
- 3) Extra Credit. There are opportunities to learn about creative research methods from other faculty and industry professionals who will be speaking locally. I have included a list of pre-approved events on page 10. Other events may arise during the term, and if so notifications will be posted on Canvas. Your attendance, proof by selfie, will earn you 10-points, and you may participate in extra credit opportunities

three times this term (earning a total 30-points).

Final

The final is customizable to each student's desired goal for this course - whether a methods or results chapter or to complete a draft for review (CLO1). Undergraduate students are encouraged to write a Statement of Research showing topic mastery in scholarly literature plus identifying GIS methods that may be useful in addressing a proposed research topic. This individual assignment must be a minimum of 3,000 words (include a word count) exclusive of front and back materials, figures, tables, and/or appendices. All written work should be referenced and formatted to meet submission guidelines of the AAG, that being Chicago 15th edition (times new roman 12-point font, 1" margins on all sides).

Grading Information

	Points Possible
Participation: at least 2 check-ins with instructor during the term	60 (30-each)
12 Assignments	240 (20-each)
Final	100
EC: Learn from others by attending a research methods presentation (SPUR, SJSU, or one you find but get instructor approval)	30 (10 each)
TOTAL	400

SCALE:

A+ = ≥98%	A = 94-97%	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%

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. In keeping with this policy, and to making grading responsive. All assignments are due as stated on the Course Schedule and Canvas. **Late work is not accepted.** Please save all your work 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.

Online Class Protocol

- Readings and preparatory work must be done prior to addressing forum prompts to ensure complete and thought provoking discussion.
- Plagiarism in any form is unacceptable and will merit a 0 for the assignment.
- All courses require civility and courteousness. While we may not agree with other perspectives and opinions stated, respect is mandatory.

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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

27472 / Seminar in Research Design for Geographic Information Science, Spring, 2017, Course Schedule

This schedule is subject to change with fair notice so please check Canvas for latest course information.

Week	Date	Topics, Readings, Assignments, Deadlines
1	1/26-1/29	<p>GETTING STARTED – Welcome back!</p> <p>Read: The course syllabus. No, really, read this syllabus start to end. This class will be very demanding.</p> <p>Assignment 1:</p> <ul style="list-style-type: none"> • Part A) Introduce yourself to your online classmates. Let us all know your background, your research (as in topic and current status), and experience with GIS. It is perfectly ok if your answer is “beginner,” but then explain what you want to learn, why, and something you think could be an interesting GIS research avenue. • Part B) Establish your actual baseline workload and commitments and set realistic semester timelines and course product. Determine your desired individual written outcome and submit it in writing on Canvas. As an undergraduate student this should be a statement of research [that could be used in a grad school application] exploring different GIS tools and techniques available to address the geographic research avenue you stated above. As a graduate student you should have a project or thesis going which requires a methods chapter. Part of this should, though not always does, contain some mapping element. If your methods chapter is already completed then use this term final to run your methods, and complete a results chapter for the final.
2	1/30-2/5	<p>INTRODUCTION – Defining research design.</p> <p>Read: de Vaus, David. 2001. <i>Research Design in Social Research</i>. SAGE. http://www.nyu.edu/classes/bkg/methods/005847ch1.pdf</p> <p>Note: this reading gets fairly complex. Do not get overly bogged down in the details, but instead try to understand the larger message.</p> <p>Assignment 2: Hone your research interest into a single research question. <i>Tip:</i> you will have likely achieved this when you are extremely specific, and the project or thesis title almost writes itself.</p>
3	2/6-2/12	<p>APPROACH – Determining the correct method for your question? Here are you choices.</p> <p>Read: USC Libraries Research Guide. 25 Jan 2017. Types of Research Design. http://libguides.usc.edu/writingguide/researchdesigns</p> <p>Assignment: 3 Identify any two methods that you believe can best answer your stated research project question, and discuss their pros and cons in an annotated table format. In doing this which one method wins out?</p>

Week	Date	Topics, Readings, Assignments, Deadlines
4	2/13-2/19	<p>SCHOLARSHIP - By now you should all be experts at accessing scholarly materials through campus library channels. It is important in all research, especially graduate projects and theses, to have what you need, neatly organized, when you need it. This means knowing what's available and requesting these materials early and/or often. A well-written final graduate project/thesis should have at minimum of 60 reputable sources, if not more. That said, a methods chapter would not be where you discuss most sources as they frequently belong in the Introduction. Still a few great works will be helpful in guiding your own methodology, and thus deserve credit. If you need assistance finding sources do yourself the favor of contacting our department Library Liaison, Nyle Monday (see page 2).</p> <p>Assignment 4.</p> <ul style="list-style-type: none"> • Part A) Prepare a bibliography of no less than 10 scholarly sources pertaining to your project/thesis or statement of research. This needs to be compiled in proper citation format as if it were for submission to the <i>Annals of the AAG</i> (Chicago 15th Ed). After each bibliographic entry you need to paste the source abstract or introductory paragraph. • Part B) So that no one is tempted to just borrow results from a quick or cursory academic search premier query. You must submit evidence of scholarly article download too by compiling them into an organized folder and screen shooting your directory in list format.
5	2/20-2/26	<p>ETHICS I – This is fundamentally important for social scientists. Does your project involve working with any animals or humans? Will you be asking anyone anything about your project? Navigating the university Institutional Review Board (IRB) and working with human subjects.</p> <p>Read: Sigma Xi. 1999. <i>The Responsible Researcher</i>. https://www.sigmaxi.org/docs/default-source/Programs-Documents/Ethics-and-Research/responsible-researcher.pdf?sfvrsn=2</p> <p>Start Assignment 5</p>
6	2/27-3/5	<p>ETHICS II – Geography & SJSU</p> <p>Read: AAG Statement on ethics Read: SJSU IRB Policies then Complete CITI Training</p> <p>Finish Assignment 5: Complete the SJSU IRB application based on your graduate project/thesis. If you are an undergrad, or have a graduate project for which IRB absolutely does not apply (first ask instructor if this is the case) then you must create a mock project [perhaps the one in your proposed statement of research] and complete this application accordingly.</p>

Week	Date	Topics, Readings, Assignments, Deadlines
7	3/6-3/12	<p>GIS DATA EXPLORATION – I’m telling you now they do exist. I am challenging you to find what data is readily available today. So rarely does the perfect dataset for your highly specific research question exist, let alone reveal itself magically, then whittle down what you do find with the probability of projections overlaying perfectly and you have virtually nothing. It can feel so defeating, and you can spend hours/days/weeks/months screaming at your screen in frustration. I actually know someone who spent two years of her phd waiting on data to move forward. Lesson here, exploration is one of the most time consuming and draining aspects of geographic research.</p> <p>Assignment 6:</p> <ul style="list-style-type: none"> • Part A) List all the data layers you find on your topic and create a bibliography identifying the creator, data format (images, rasters, tables, .shp, .gdp, .mxd), meta/description, and link to location. Then download it, package it into an organized folder, and submit a screenshot of the listed files: 20-minimum. • Part B) Submit a list of all data you think you still need (i.e. what is missing to answer your question) along with a short statement for each as to why you need it (meaning what gap does this perfect data fill). 10-minimum.
8	3/13-3/19	<p>GIS TOOLS & TECHNIQUES I – Eventually routine GIS methods (like repetitive work tasks) plateau a user and so one becomes only accustomed to a couple of key extensions and tools. His/her once of breadth of trained knowhow can go by the wayside. Keep in mind the skill level in this course ranges from almost no GIS history to employed professional analyst making it nearly impossible to assign a one size fits all laboratory exercise. So here is your opportunity to refresh or advance. You may use these two weeks to progress your GIS research design or spend two weeks just to get better familiar with GIS as a software.</p> <p>Assignment 7: You may wish to request a step-by-step ESRI ArcGIS lab if you are a brand new GIS user. But, if you are at least moderately familiar with ArcGIS or QGIS then you need to identify any suite of tools that you are currently unfamiliar with and that intrigue you. Nobody knows every tool and operation so dig a little to make this exercise worthwhile. Find a pertinent dataset to play with (perhaps you have one) and run all commands associated with the toolset until you get all the results whether statistical, attribute table, and/or map.</p>
9	3/20-3/26	<p>GIS TOOLS & TECHNIQUES II – Repeat</p> <p>Now do it all over again, but use different data and different tools.</p> <p>Assignment 8: You may wish to request a step-by-step ESRI ArcGIS lab if you are a new GIS user. But, if you are at least moderately familiar with ArcGIS or QGIS then you need to identify any suite of tools that you are currently unfamiliar with and that intrigue you. Nobody knows every tool and operation so dig a little to make this exercise worthwhile. Find a pertinent dataset to play with (perhaps you have one) and run all commands associated with the toolset until you get all the results whether statistical, attribute table, and/or map.</p>

Week	Date	Topics, Readings, Assignments, Deadlines
10	3/27-4/2	SPRING BREAK – No Assignments
11	4/3-4/9	<p>COMMUNICATE - Research is always an endurance effort but what's the point if nobody understands your ideas, goals, or results? Findings need to be interpretable and communicated quickly, and clearly, to all intended audiences.</p> <p>Watch: Marshall, Melissa. 2012. TED Global: Talk Nerdy to Me https://www.ted.com/talks/melissa_marshall_talk_nerdy_to_me</p> <p>Assignment 9: Several graduate students will be representing SJSU in Boston at AAG17 where they will be presenting 20-minute talks about their research findings to date. Everyone else will be responsible to do a distance version by submitting a recorded conference-style presentation narrating slides. Check out Present.me a web-based tool to do just this! Your presentation should cover your current research, which if you have not finalized methods (or are an undergrad) then make it a summary of the scholarly literature on your research interest. This will force you to get more sources toward writing your final. Remember these literature reviews must cover three pertinent research lines. In your closing statement mention how you believe your work will extend this existing body of knowledge.</p>
12	4/10-4/16	<p>DESIGN – Pictures really are worth 1,000 words! Methods sections can be really challenging, and boring, to write and more so to read. Why not convey your step-by-step analysis as artwork.</p> <p>Check out: Cynthia Brewer's map tool which has made quicker work out the once arduous color selection conundrum. Works for all color visuals http://colorbrewer2.org/#type=sequential&scheme=BuGn&n=3</p> <p>Assignment 10: Methods chapters are made for this assignment. Communicate your research design as a flowchart or directional graphic using any software you are comfortable with, but submit your work in a .pdf because Canvas is fickle about accepting file types. Make mention which tool(s) you used to create something so spectacular.</p>
13	4/17-4/23	<p>WRITING – Slow and steady wins the race here. Students often finish their graduate programs of study (coursework) quickly, but fail to complete a project or thesis and unfortunately never get the degree. Some estimates are as high as 1:3 don't finish because writing gets to be too cumbersome. This is a costly life mistake! How does one overcome this supposed burden? 15-minutes per day. No, seriously, if you make an agreement with yourself to sit down every single day and write for at least 15 minutes then it forces you to make progress no matter how small. More often than not, it gets the brain going and you will achieve far more than you set out to do. Eventually, you are done!</p> <p>Read: Gropen, G.G and Judith Swan. Nov-Dec 1990. The science of scientific writing. <i>American Scientist</i> http://www.americanscientist.org/issues/pub/the-science-of-scientific-writing</p> <p>Start Assignment 11</p>

Week	Date	Topics, Readings, Assignments, Deadlines
14	4/24-4/30	<p>WRITING – Keep on writing. This had better be good.</p> <p>Finish assignment 11: Submit your draft for peer-review.</p>
15	5/1-5/7	<p>PEER REVIEW – Publishing is no easy task but it is part of the job. Reviewers are harsh critics. That which does not kill us makes us stronger. And, the writing better.</p> <p>Assignment 12: Below you have been assigned a peer review team for your final written product (as agreed to in Assignment 1B). Feedback from two assigned reviewers is required for each paper before submitting a final draft can be submitted in this course. One reviewer is a classmate of equal or further progress in his/her graduate research, and the other reviewer is just starting his/her research process (or might still be an undergraduate student). Reviewers are encouraged to pick apart the readability of the writing, and also look for holes in research design approach and chosen methods. Vague or glossed-over commentary by any reviewer will result in the reviewer receiving a low grade on this assignment since this is a disservice to the editorial process and the author's original contribution. Authors will send each reviewer a clean draft electronically. Each reviewer will independently review the writing using track changes on by Friday. Once the edited versions are returned to the author, the author will create and submit a single pdf showing all suggested track changes by Sunday.</p>
16	5/8-5/14	<p>REVISE - Copyediting makes all writing better.</p> <p>Read each word aloud, go back and rewrite, ask your significant other whether it sounds ok, call your mom for help, then seek out a professional editor and revise again. Once you have done this and addressed all peer-review comments then you are ready for a graduate advisor and committee to review your work.</p>
Final	5/21	<p>PUBLISH</p> <p>Submit your final version on Canvas by 11:59pm</p>

Peer Review Teams

Author	Reviewer 1 - Undergrad	Reviewer 2 - Grad
Leah Grant, MS Applied Anthro	Chris Munguia	Allison Gibson
G. Clementina Bebb, MS Applied Anthro	Gabriella Bracamonte	Justine Cuevas
Nicole Tomes, MS Env. Studies	Lisa Ruder	Amber Villa
Kaylan Hager, MS Geography	Luis Perez	Will Braganza
Daisy Gutierrez, MS Geography	Staci Potter	Tuan Lu
Ana Rivera, MS Geography	Liana McWilliams	Nicole Tomes
Tuan Lu, MS Geography	Aseem Mogre	Ana Rivera
Will Braganza, MS Geography	Jacob Swiech	Kaylan Hager
Amber Villa, MS Geography	Dominic Hugyik	G. Clementina Bebb
Justine Cuevas, MS Geography	Stephen Lee, Jr	Leah Grant
Allison Gibson, MS Geography	Garret Lewis	Daisy Gutierrez
Luis Perez, BA Geography	Chris Munguia	Allison Gibson
Staci Potter, BA Geography	Gabriella Bracamonte	Justine Cuevas
Jacob Swiech, BA Geography	Lisa Ruder	Amber Villa
Lisa Ruder, BA Geography	Luis Perez	Will Braganza
Garret Lewis, BA Geography	Staci Potter	Tuan Lu
Dominic Hugyik, BA Geography	Aseem Mogre	Nicole Tomes
Stephen Lee, Jr, BA Geography	Liana McWilliams	Ana Rivera
Chris Munguia, BA Geography	Jacob Swiech	Kaylan Hager
Gabriella Bracamonte, BA Geography	Dominic Hugyik	G. Clementina Bebb
Aseem Mogre, BA Geography	Stephen Lee, Jr	Leah Grant
Liana McWilliams, BA Geography	Garret Lewis	Daisy Gutierrez
Devin Pate, BA Geography	Chris Munguia	Allison Gibson

Approved Extra Credit Events:

2/28 12:30pm SPUR San Francisco “Making Mind-Blowing Models [of the Bay Area]” by Metropolitan Transportation Commission. <http://www.spur.org/events/2017-02-28/making-mind-blowing-models>

2/16 4:00pm SJSU MLK Library “Assembling Indigenous Archives – Dr. Kelly Wisecup”
http://events.sjsu.edu/EventList.aspx?fromdate=2/15/2017&todate=2/21/2017&display=Week&type=public&eventidn=23202&view=EventDetails&information_id=37740

4/26 11:30am SJSU. College of Social Science Student Research Colloquium. Details forthcoming.