



SPA110

# Introduction to Spatial Analytics and GIS

GIS110

Spring 2025

Introduction to Spatial Analysis and GIS

T-Th 9:10-11:50 Section 01

T-Th 1:15-3:55 Section 02

**COURSE INSTRUCTOR:**

**Will Wagner**, M.S. - Spatial Instruction Manager  
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**ADDITIONAL SUPPORT:**

**Lisa Benvenuti**, Spatial Research Manager  
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## Course Description

This course introduces concepts of spatial analysis, geographic information systems (GIS), global positioning systems (GPS) and mobile mapping. We will help you develop spatial reasoning and analysis skills by engaging in problem solving with GIS.

In classroom labs, we will introduce basic mapping skills then use GIS to find the best location for a new park along the Los Angeles River in Southern California. These hands-on exercises will walk you through framing the problem and exploring the research area, previewing data, choosing data, building a database, editing data, conducting an analysis, automating an analysis, presenting analysis results, and sharing results online.

Along the way—in readings, lectures, demonstrations and activities—we will explore spatial data models, data requirements and acquisition, spatial analysis using GIS, implementation within an organization, web and mobile mapping as well as the application of GIS to problem-solving in other disciplines.

## Course Objectives

1. Learn how to formulate spatial questions and solve spatial problems with GIS
2. Gain skill in following a spatial project through, from framing the problem to conducting an analysis to presenting the results
3. Develop skill in using the ArcGIS Pro and ArcGIS Online platforms
4. Understand the basic theory and application of GIS

## Class Meetings

We will meet in **Lewis Hall, room 102**. Along with in-person classroom instruction, we will also take advantage of Canvas and Microsoft Teams. Usually, the first third of the class time will focus on lecture and discussion. After lecture time, class will work on lab activities either in Lewis 102 or other campus computers.

You are required to log into Teams during this work time. I will take attendance.  
If you leave early, you will be marked as absent.

**Attendance, preparation, and participation are critical in this class— You are expected to attend all classes and complete assigned material before the corresponding classroom sessions.**

**Starting with your second unexcused absence your grade will be dropped one grade level. For example, if you earned a 3.7 in this class but had two unexcused classes, your grade would drop to a 3.3.**

**All sport-related absences must be approved before the event. Illnesses are excused but be sure to communicate with me prior to class, if possible.**

# Software application access. Open Lab

ArcGIS Pro is available from any computer on campus. ArcGIS Online is available from any computer with an Internet connection, on or off campus.

## Course Text

There is no textbook required for this course. All readings will be either online or distributed digitally.

## Canvas

The course **2022FA Intro Spatial Analysis & GIS (GIS-110-01 or GIS-110-02)** should be listed on the **Courses** list in **Canvas**. Contact me if you do not see the course listed.

## Schedule

*Schedule – Not Necessarily 100% Current – Check Online at Canvas for Accurate Schedule*

### Part I: GIS Fundamentals

Week	Class	Topic	Date
Week 1	Class 1	<a href="#">The What and Why of GIS</a>	Tu Jan 7
	Class 2	<a href="#">Introduction to ArcGIS Pro</a>	Th Jan 9
Week 2	Class 3	<a href="#">Maps and Data</a>	Tu Jan 14
	Class 4	<a href="#">Cartography</a>	Th Jan 16
Week 3	Class 5	<a href="#">Create Your Own Map</a>	Tu Jan 21
	Class 6	<a href="#">Map Projections and Coordinate Systems</a>	Th Jan 23
Week 4	Class 7	<a href="#">Vector Data Model</a>	Tu Jan 28
	Class 8	<a href="#">Database Management</a>	Th Jan 30
Week 5	Class 9	<a href="#">Crafton Hills Mapping Project</a>	Tu Feb 4
	Class 10	<a href="#">Spatial Analysis I: Searches and Queries</a>	Th Feb 6
Week 6	Class 11	<a href="#">Spatial Analysis II: Geoprocessing</a>	Tu Feb 11

	Class 12	<a href="#">Terrain Analysis</a>	Th Feb 13
Week 7	Class 13	<a href="#">Raster Overlay</a>	Tu Feb 18
	Class 14	<a href="#">Intro to Mobile Mapping - GPS - QuickCapture</a>	Th Feb 20
	Class 15	<a href="#">Mobile Mapping - Field Maps and Survey123</a>	Tu Feb 25
Week 8	Class 16	<a href="#">Drone Mapping</a>	Th Feb 27
		Spring Break	Mar 3-8
<b>Part II: Practical Application and Investigations</b>			
Week 10	Class 17	<a href="#">Practicum Step 1: Framing the problem and find the data</a>	Tu Mar 11
	Class 18	<a href="#">Practicum Step 1: Framing the problem and find the data</a>	Th Mar 13
	Class 19	<a href="#">Practicum Step 2: Explore, find and choose the specific attributes.</a>	Tu Mar 18
Week 11	Class 20	<a href="#">Practicum Step 3: Extract, Transform and Load the Database.</a>	Th Mar 20
	Class 21	<a href="#">Practicum Step 3b: Complete ETL / Begin Analysis.</a>	Tu Mar 25
Week 12	Class 22	<a href="#">Practicum Step 4: Analysis and Exploratory Map Making.</a>	Th Mar 27
	Class 23	<a href="#">Practicum Step 5: Finalize or Create any Necessary Maps or Map Layers.</a>	Tu Apr 1
	Class 24	<a href="#">Practicum Step 6: Create your StoryMap for your Presentation</a>	Th Apr 3
Week 13	Class 25	<a href="#">Complete and polish StoryMaps</a>	Tu Apr 8
		<b>Student Presentations - 5 minutes each. Dress Business Casual I will bring Snacks and Drinks</b>	
Table 1			

## Class Assignments and Grading

- All course announcements, assignments, additional resources, quizzes, and tests are provided in Canvas.

- I expect you will remain in the lab for the entire lab time to work on assignments.
- Weekly assignments will be due one week later at 9 am.
- Do not wait until the night before to begin homework assignments.
- Do not wait until 10 minutes before the deadline to attempt submitting your assignment.
- **Late work will be penalized.**
- You must notify the instructor 24 hours before assignments are due for any extension.
- **Do not email me the assignment if you miss a deadline.**
- **And the biggest DO NOT for this course. Don't submit another student's screenshot for an assignment.**

## Time Management

The course takes discipline! Please keep up with your work. We designed this course so that most of the activities can be completed in class. Schedule time each day to work on assignments. Let us know if circumstances in your living environment are interfering with your ability to succeed in college.

## Course policy

- Respect the learning environment
  - Turn off your cell phone
  - No Internet browsing unless indicated

# Grades

Course grades will be allocated as follows. Some categories are approximate.

Quizzes (readings, lecture, or activities)	130
Activity assignments	140
LA River Workbook Lessons (activities and quizzes)	230
Total points for class	500

## PARTICIPATION

Full attendance and active participation are expected. To facilitate class participation, you may be asked to comment on and discuss other students' work.

## GRADING SCALE

<b>4.0</b>	A (94%)	<b>2.0</b>	C (73%)
<b>3.7</b>	A- (90%)	<b>1.7</b>	C- (70%)
<b>3.3</b>	B+ (87%)	<b>1.3</b>	D+ (67%)
<b>3.0</b>	B (83%)	<b>1.0</b>	D (60%)
<b>2.7</b>	B- (80%)	<b>0.0</b>	F (0%)
<b>2.3</b>	C+ (77%)		

## GRADING SCALE

The University of Redlands uses a numeric grading system, in which 4.0 corresponds to an A, 3.7 to an A-, 3.3 to a B+, 3.0 to a B, 2.7 to a B-, 2.3 to a C+, 2.0 to a C, 1.7 to a C-, 1.3 to a D+, 1.0 to a D, a 0.7 to D-, and a 0.0 to an F. These grades correspond to the following:

90 – 100%	3.7, 4.0	A: Outstanding	Exceptional grasp of the material, frequently with evidence of intellectual insight and original thought.
80 – 89%	2.7, 3.0, 3.3	B: Excellent	Work demonstrated a thorough grasp of the material with occasional errors and omissions. Assignments were thoroughly and completely done, with careful attention to detail and clarity, and with evidence of intellectual insight.
70 – 79%	1.7, 2.0, 2.3	C: Acceptable	The quality of the work was acceptable, meeting minimal course standards, but not exceptional. Performance on examinations and other assignments was satisfactory and demonstrated that the student was keeping up with the material and attending to detail.

60 – 69%	0.7, 1.0, 1.3	D: Poor	The quality of work was not always satisfactory, but overall was passing. Assigned work was not always done, and when done was inadequate. Performance on examinations and other work was generally weak with regard to understanding of subject, proper formulations of ideas, and thoroughness.
Below 60%	0.0	F: Failing	"F" indicates that the student failed the course. The quality and quantity of work was not of college level. A failing grade may be assigned for a variety of reasons such as failure to complete course requirements as outlined in the syllabus, inability to comprehend course material or ineptitude in dealing with it, consistently unsatisfactory performance on examinations and/or assignments, or excessive absences.

**I: Incomplete.** An “incomplete” is not given for poor or neglected work. A grade of “incomplete” is to be granted only for very special reasons and should occur only after a discussion between faculty and student, initiated by the student. The decision of whether to grant an incomplete is dependent on an emergency that prevents the student from completing (on time) the work necessary for the course. An incomplete grade will be converted to a permanent grade within eight weeks from the last session of the course. This means that the instructor must turn in the grade to the Registrar no later than the eighth week. Any incomplete work must be submitted to the instructor with enough lead time for the instructor to evaluate the work and issue a final change. See U of Redlands Catalog.

**W: Withdraw.** Student officially withdraws from the course. A student who stops attending the course may be administratively withdrawn and issued a grade based on the amount of work completed for the entire course, not a pro-rata grade based on the completion of work done up to the point the student stopped attending. Details are outlined in the U of R Catalog.

#### **GRADING**

Each assignment will be graded according to a skills rubric when appropriate. If all required skills are accomplished for an assignment, 100% credit is awarded.

Points are awarded for on-time submissions, so assignments must be submitted on time to receive full credit. If you miss a class and an assignment is due, it is your responsibility to make sure the assignment is submitted before the due date and time. If you miss a class or deadline for health reasons, you must submit documentation of your illness.

## Academic Honesty

The University of Redlands Policy on Academic Honesty will be strictly adhered to and applied. The Procedures for Addressing Academic Honesty are set forth in the [University of Redlands Catalog](#). It is expected that all students read and understand the Policy and the provisions outlined in the Catalog.

The highest standards of academic conduct are required. This is particularly true for the proper citation of course and research material in *all* written assignments. If you did not actually collect the data or independently arrive at the idea presented, then a proper citation must be used.

Citations (in the form of parenthetical notes, endnotes or footnotes) must be used for quoted or paraphrased text and any time you borrow an idea from an author, the instructor, or your peers.

Using someone else's sentence or organizational structure, pattern of argument and word choice, even if not exactly similar in every respect, warrants citation. It is your responsibility that citations and quotation marks **unambiguously** highlight the ideas, words, sentences, and arguments that you borrow from other sources. Paraphrasing is not simply changing one or two words in a sentence; it **completely** reconstructs someone else's idea in your own words.

For guidelines on appropriate citation, quotation, paraphrasing, and plagiarism, see the [materials provided by Armacost Library](#).

Discussion with the instructor and your peers is encouraged before the composition of written work; however, all written work, unless specified by the instructor, is to reflect independent composition and revision. Students working on group or collaborative assignments are expected to contribute equally to all tasks necessary for completion of the assignment.

Students are expected to follow all written and verbal instructions provided by the instructor about written assignments, quizzes and/or exams. In addition to plagiarism, other impermissible academic behavior includes, but is not limited to, collaboration without instructor consent, falsifying research data, illicit possession of exams, using study aids during exams, unauthorized communication about an assignment or exam, handing in others' work as your own, reusing assignments or papers from other courses, and impeding equal access to educational resources by other students.

Time constraints, the demands of work and family, failing to read the University's Policy on Academic Honesty, unintentional misuse of sources, or a lack of preparation do not excuse academic dishonesty or otherwise mitigate the appropriate penalty. Penalty for a first offense is at the discretion of the instructor.

If a student is uncertain about appropriate methods of citation or has a question about the academic honesty policy, it is his or her responsibility to seek guidance from the instructor, a university official, or another reputable source.

## Accommodations

If you are a student with a disability requesting reasonable academic accommodations in this course, please contact Academic Support and Accessibility (ASA). ASA is located in the Student Success Center on the ground floor of the Armacost Library. You can reach the office at 909-748-8069 or [asa@redlands.edu](mailto:asa@redlands.edu). All requests for reasonable accommodations require registration with ASA in advance of need. Faculty, students, and ASA will work together regarding classroom accommodations. You are encouraged to discuss approved accommodations with your faculty. More information is available on the [ASA webpage](#).

## Office of Equity and Title IX

In order to provide a safe and equitable learning environment for all students, faculty, and staff, discrimination, harassment, retaliation, sexual misconduct, and sexual harassment (including sexual assault, dating or domestic violence, and stalking) are not tolerated at the University of Redlands. The

University prohibits unlawful discrimination or harassment (as defined in the [Policy Prohibiting Discrimination, Harassment, Sexual Misconduct, and Retaliation](#)) on the basis of age, color, race, ethnicity, national origin, ancestry, sex, marital status, pregnancy, status as a complaining party of domestic violence, sexual orientation, gender, gender identity or expression, physical or mental disability, genetic information, religion/creed, citizenship status (except to comply with legal requirements for employment), military/veteran status, or any other characteristic protected by law. If you or someone you know has experienced or experiences any of these behaviors, know that you are not alone. You can contact the Office of Equity and Title IX for reporting options, supportive measures, and resources to support you.

Many faculty and staff at the University of Redlands are considered “Responsible Employees,” which means that if you tell me about a situation involving any of the above, I must report the matter to the Office of Equity and Title IX. Although I make that report, you are in control of how you would like to proceed, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of reporting options available to you and have access to the support and resources you need.

To report an incident directly, you can:

- Contact the Interim Director of Equity & Title IX, Christopher Jones, at 909-748-8289 or [titleix@redlands.edu](mailto:titleix@redlands.edu)
- [Report online](http://www.redlands.edu/titleixandequity) at: [www.redlands.edu/titleixandequity](http://www.redlands.edu/titleixandequity)

You can also report to local law enforcement at 909-798-7681, ext. 1. If you are ever in immediate danger, please call 911 or email/text [911@redlandspolice.org](mailto:911@redlandspolice.org) if you cannot call.

To reach Public Safety on campus, call 909-748-8888 or use the [Rave Guardian](#) app.

If you wish to speak to someone confidentially (meaning not connecting with the Office of Equity and Title IX Office), you can contact the following resources:

- Campus:      [Counseling Center](#): 909-748-8108 or 24-Hour Crisis Line: 909-748-8960  
                  [TimelyCare](#), 24/7 emotional support; 12 free telehealth counseling sessions
- Community:    [Partners Against Violence](#), 24-hour sexual assault crisis line: 909-885-8884  
                  [Option House](#), 24-hour dating/domestic violence crisis line: 909-381-3471
- Online:        <https://www.rainn.org/> (sexual assault); <https://www.loveisrespect.org/>

For more information, visit [www.redlands.edu/titleixandequity](http://www.redlands.edu/titleixandequity)

## Additional Support and Resources

### Writing Tutoring

Peer writing tutoring is available in-person and online throughout the semester. You can visit a tutor at multiple stages of your writing process for each project/ assignment/ essay/ etc. You and your tutor can

have a brainstorming conversation if you aren't sure where to begin, and you can continue to meet throughout your drafting and revision process. Please note that tutors can assist with writing in ALL disciplines, not just the humanities.

You can schedule a tutoring session at <https://redlands.mywconline.com>.

You can contact the office of Academic Support and Accessibility at [asa@redlands.edu](mailto:asa@redlands.edu) or call 909-748-8069 if you have any questions. They're happy to help any time!

## **Subject Tutoring**

Peer subject tutoring is available in-person and online throughout the semester for many courses. You can select your specific course when you log in to the Subject Tutoring Fall 2024 schedule at <https://redlands.mywconline.com>. Select the tutor and time of your choice. All tutors are students who have taken the same course, often with the same instructor. You will need to book your tutoring session at least one day in advance and provide details about what you would like to work on to allow your tutor enough notice and preparation time.

You can meet with your tutor as little or as often as you'd like, up to two hours per week per course. Students at the UoR use tutoring to work on all academic goals, from better understanding difficult concepts to achieving a 4.0. Tutoring is individualized to each student.

You can contact the office of Academic Support and Accessibility at [asa@redlands.edu](mailto:asa@redlands.edu) or call 909-748-8069 if you have any questions. They're happy to help any time!

## **Counseling Center**

The Counseling Center provides free and confidential mental health services, including short-term individual therapy, group therapy, single-session therapy, consultations, and urgent appointments to all students with in-person or virtual options. Our Counseling Center is committed to inclusivity and to providing a supportive space for everyone. Please call 909-748-8108 to schedule an appointment or email [counseling\\_center@redlands.edu](mailto:counseling_center@redlands.edu). If a student is in crisis, please call 909-748-8960 for the 24/7 mental health crisis line. For more information on our resources, go [here](#). Another option for individual therapy for all students is [TimelyCare](#), which provides virtual therapy immediately (Talk Now) or up to 12 scheduled virtual therapy sessions per year. Students can choose their therapist from a list of providers for the scheduled therapy option.

## **CARE Team**

The University [CARE Team](#) exists to help provide support and resources to students that are overwhelmed, experiencing significant distress, or possibly present some risk to themselves or others. As a faculty member, I may reach out to students about whom I am concerned to talk individually, and/or refer them to the CARE Team. If you have concerns about a fellow student, consider sharing your concern with the CARE Team via their [online form](#). This is part of who we are as a caring, proactive community where we all look out for one another. Additionally, if you feel that you or someone else needs immediate mental health support, the University has a 24/7 mental health crisis line at [909-748-](#)

[8960](#), and the [Timely Care](#) app, which offers on-demand emotional care. Both services connect to a live, licensed counselor.

### **Emergency Student Loans:**

Student Financial Services (SFS) administers a short-term, no-interest loan fund to assist students experiencing an emergency or cash-flow problem. Except in unusual circumstances, these loans do not exceed \$200 and are billed to the student's account. Evidence of repayment ability is a prerequisite for all short-term loans made to students. Students are eligible one emergency student loan per term.

**Contact:** [SFS@redlands.edu](mailto:SFS@redlands.edu) or x8047

### **Student Food Support Pantry:**

The Student Food Support Pantry is a resource available to all established full and part-time University of Redlands students facing food insecurities. The Pantry is located on the north side of North Hall (look for the banner with Bulldog on it). Hours of operation are Monday through Friday from 11:30 a.m. to 6:00 p.m. year-round. This space is an open, no-questions-asked space with dried and canned goods, and non-perishable items, as well as seasonal fresh produce from our sustainable farm and limited refrigerated goods. Food for this distribution is provided in partnership with Feeding America Riverside and San Bernardino. It is also funded through private donations and the Office of Community Service Learning. For more information, please contact [SURF@redlands.edu](mailto:SURF@redlands.edu)

### **Conflict Resolution Center**

Experiencing a conflict? Whether it's with a friend, roommate, another member of a student organization, or faculty or staff member, conflicts happen. Learning to navigate conflicts is important to success in virtually any field, and a vital step in being a part of a community and having healthy, meaningful relationships with others. See <https://sites.redlands.edu/conflict-resolution-center/student-resources/> for more information.

### **Book Lending Program:**

The Book Lending Program is an initiative to ensure the academic success of First-Generation students (students who are the first to go to college in their families and who meet a particular estimated family contribution [EFC] level). Funded through alumni donations, this program provides books and other classroom materials, when needed, for First-Generation students who could not otherwise afford to purchase them. Books are returned at the end of the course, to be used by other First-Generation students the next semester. The program works alongside the Library and faculty members to ensure the availability of books and classroom materials. For more information, see <https://www.redlands.edu/student-affairs/campus-diversity-and-inclusion/programs/first-generation-student-programs/book-lending-program/>

**Contact:** [blp@redlands.edu](mailto:blp@redlands.edu)

### **Technology Lending**

The Armacost Library provides loans of laptops and other technology, including Bluetooth headphones, digital audio recorders, and smart pens, which can assist with note-taking and audio recording. For those needing ergonomic or accessibility devices, the library has ergonomic keyboards, high visibility

keyboards, an ergonomic joystick, and an ergonomic trackball. These resources are accessible to all University of Redlands students on a first-come, first-served basis. For a full list and to check the availability of these items, please visit the [Armacost Library's webpage](#) or call (909) 748-8022.

### **Student Discretionary Fund:**

The Student Discretionary Fund, managed by Student Affairs, is designed to support student success by addressing financial challenges that could otherwise lead a student to pause or discontinue their education. Divisional leadership will be informed of the student's need for financial assistance to access this fund. The support provided can cover a range of personal expenses, including utility bills, gas money, emergency travel home due to a family tragedy, off-campus counseling, medical costs, and occasionally mental health assessments. Grants from this fund are awarded based on the student's financial need. To apply, students can complete the Student Discretionary Fund Application, which is available at <https://forms.office.com/r/aX7dvAnbG2> or contact [student\\_affairs@redlands.edu](mailto:student_affairs@redlands.edu).

### **Student Lounges:**

Lounges for all students to sit, work, and eat can be found [here](#) on the University website.

### **References**

University of Redlands. (2023). *Academic Catalog*. 2023-2024 edition.