

# Geographic Information Science



## GIS 411/611 – Fundamentals of Geographic Information, Research, Techniques & Applications

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### Course Description:

This course provides students with the foundation of theoretical and applied skills in geographic information science and technology. Students work on a progression of tasks and assignments focused on GIS data collection, manipulation, analysis, output, and presentation. The assignments supplement and reinforce the GIS theory and technology concepts introduced through lectures and discussion.

### Course Objectives:

The goal of these courses is to ensure that all students have a solid foundation of the basic geographic information technology theory and skills that will be used throughout the MGIS and MS GIS degree programs. By the conclusion of this course, students should have a working knowledge of geographic data, an understanding of the issues related to spatial data modeling and representation, and a general proficiency with the tools, methods, and techniques necessary to collect, organize, manipulate, analyze, and output GIS data using ArcGIS Pro 3.x.

### Required Text and Map:

- *GIS Fundamentals — A First Text on Geographic Information Systems*, 7<sup>th</sup> edition. Paul Bolstad and Steven Manson. Eider Press, 2022. ISBN: 9780971764750, 0971764751
- Redlands, California 1:24,000 USGS Topographic Quadrangle. (Known in the bookstore as “the GIS map”.)
- Instructors may have supplementary readings available on the course Canvas site

### Meetings:

The class will meet Tuesdays from 6:00 pm to 8:00 pm, except where noted in the schedule below.

### Prerequisites:

This course assumes that the student has a basic level of competency using ArcGIS Pro 3.x, similar to the material presented in the Esri instructor-led course *ArcGIS Pro: Essential Workflows*. Students may also supplement the prerequisite requirement with self-paced coursework from the Esri Virtual Campus, e.g., *Getting Started with GIS (web course)*, *Get Started with ArcGIS Online (tutorial)*, *Get Started with the Map Viewer (tutorial)*, and *Getting Started with ArcGIS Pro (web course)*.

### Academic Honesty:

The University policy on academic honesty will be strictly enforced. The latest version can be found in the University Catalog at <http://www.redlands.edu/study/registrars-office/course-catalogs/>.

You should read this. If you have any questions about what constitutes academic dishonesty on a particular assignment, ask the professor.

### **The Use of Generative AI:**

Zero tolerance: In this course, there is no ethical use for generative AI tools such as ChatGPT. All assignments ask you to use only resources from our course or other approved sources to develop your ideas at all stages of writing. Use of generative AI at any stage of a project, including outlines and drafts, will be considered a violation of the university's academic honesty policy.

### **Reading Reflections:**

You will write and submit a "reading reflection" before each class meeting. These reflections should summarize, in 100-200 words, the contents of the chapter(s) or parts thereof. They should also include a question that would be suitable to include on an upcoming exam.

### **Assignments:**

Each student will complete a series of assignments that complement the lecture presentations. The focus of the assignments will be to reinforce the theoretical concepts introduced through lectures and discussions. The assignments will include exercises in spatial data discovery, collection, preparation, manipulation, analysis, output, and presentation.

### **Assessment/Grades:**

The grading scheme in many graduate level classes may be different than you expect. On some assignments or exams you may receive qualitative grades in the form of one or two words from the list below. You may find most of these defined in the University of Redlands catalog but they basically mean exactly what you would expect.

Excellent/Outstanding (4.0)  
Very Good (3.7)  
Good (3.3)  
Acceptable (3.0)  
Below standard (2.7)  
Fair (2.3)  
Poor (2.0)

Also note that final course grades below 2.0 are not acceptable for graduate credit.

The overall course grade will be based on the following elements, weighted as indicated.

Reading Reflections.....	20%	15x2h = 30h
Assignments .....	40%	10x9h = 90h
Exams (two at 15% each) .....	30%	3x10h = 30h
Attendance/Participation.....	10%	15x2h = 30h

## Tentative Class Schedule

Week	Date	Professor	Chapters to be read before class
1	7-Jan-25	Kumler	--
2	14-Jan-25	Kumler	1 and 2a
3	21-Jan-25	Kumler	3
4	28-Jan-25	Kumler	4&5
5	4-Feb-25	Kumler	6&7
6	11-Feb-25	Kumler	11
7	18-Feb-25	Kumler	Exam 1
8	25-Feb-25	Flewelling	2b
9	4-Mar-25	<i>Spring Break</i>	
10	11-Mar-25	Flewelling	8
11	18-Mar-25	Flewelling	9
12	25-Mar-25	<i>Cesar Chavez</i>	
13	1-Apr-25	Flewelling	10
14	8-Apr-25	Flewelling	12
15	15-Apr-25	Flewelling	13
16	22-Apr-25	Flewelling	Exam 2

## Syllabus Statements from the Dean's Office

### Accommodations

If you are a student with a disability that qualifies for academic accommodations under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act, contact Academic Success and Accessibility (ASA). ASA is located on the ground floor of the Armacost Library, down the hall from the Jones Computer Center (past the restrooms). You can reach the office at 909-748-8069 or [asa@redlands.edu](mailto:asa@redlands.edu) and online [here](#).

### 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.

All 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 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)

### **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.

### **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.

### **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.

**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)

**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 not eligible for more than one emergency student loan per term.  
**Contact:** [SFS@redlands.edu](mailto:SFS@redlands.edu) or x8047

**Student Affairs Discretionary Fund:**

These endowed funds in Student Affairs can be used to support student success and remove impediments that otherwise may cause the student to stop or leave school. To utilize this fund, divisional leadership should be made aware of the student in dire need of financial support. This support can be anything from personal expenses, such as utility bills, gas money, emergency trips home due to family tragedy, off-campus counseling, and other medical costs, and occasionally mental health assessment expenses. Students receive grants based on their financial need.  
**Contact:** [student\\_affairs@redlands.edu](mailto:student_affairs@redlands.edu)

**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. 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, ASUR, and the Office of Community Service Learning. For more information, please contact [SURF@redlands.edu](mailto:SURF@redlands.edu)

STUDENT LOUNGES MAP can be found [here](#) on the University website.