COLLEGE OF THE REDWOODS

Syllabus for
Geospatial Concepts

Course Information

Semester & Year: Fall 2025
Course ID & Section #: FNR-31-E9172
Instructor's name: Madeleine Lopez
Location: AT 107 and Online
Day/Time of required meetings: Thursday 6:05- 8:35 pm
Course units: 3.00

Instructor Contact Information

Office location: AT 123 or *Online: ZOOM*
Office hours: Thurs. 5:00 – 6:00 pm, Fri. 10:00- 11:30 am, by appointment
Phone number: (707) 476-4131
Email address: Madeleine-lopez@redwoods.edu

Catalog Description

An introduction to geospatial concepts. Students will learn the theory and application of GPS technology, cartography, GIS software, and remote sensing techniques.

Course Student Learning Outcomes

1. Discuss acquisition and utilization of geospatial data from various sources and integration into geographic information systems.
2. Discuss common geospatial characteristics of maps including projection systems, landmarks and features, scales, and frame of reference.
3. Analyze strengths and weaknesses of global positioning system (GPS) data and discuss basic operational parameters of the various systems in current use.
4. Apply discipline-specific vocabulary, principles, methodologies and ethics to social science inquiry and identify connections between social, political and economic events.
5. Lab Specific Outcome: Use software to develop maps from data acquired from various sources.

Required Materials

Textbook title: Geospatial Concepts: The Fundamentals of Geospatial Science
Edition: Second Edition
Author: Nicholas Malloy and Amy Rock
ISBN: 979-8577591878
*Other required readings will be made available via Canvas

USB flash drive: minimum of 12 GB storage space, but I recommend a 32 GB flash drive to hold all of your lab information as you go from class computers to your personal computer.

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Technical Requirements

To work from home, you will need reliable internet access (broadband or DSL) and a browser installed on your computer. Should problems with the internet connection arise while working on this course, it is the responsibility of the student to find an alternative internet access point, such as a public library. The **Chrome** browser is the recommended browser for interacting with the course. Note: Cookies and JavaScript must be enabled. Pop-up blockers should be configured to permit new windows from the Geospatial Institute and CR websites. Other browsers, such as Safari, Edge, and Microsoft Explorer, are **not recommended for** this course.

If you do not have a personal computer, please refer to the College of the Redwoods online support page. Additionally, if your computer is not compatible with the GIS software there is virtual lab access. The instructions to access the remote lab are posted on Canvas. If you added the class late, please be sure to submit a ticket to IT as soon as possible to get access.

Students working from personal computers that do not need the CR virtual lab are encouraged to install or have access to the following software:

- **ArcGIS Desktop Student Edition** (ArcGIS student licenses are available for all students currently enrolled in a geospatial class.) If your computer is capable of running the software, please download it. College of the Redwoods also has virtual lab access for those that cannot run the software.
- **7-Zip** (7-Zip (Links to an external site.) Not required, but helpful! This is a free, open-source file compression/decompression utility) Installing 7zip on Windows 10 (Links to an external site.)

- The following are available through your CR Portal:
  - Microsoft Office (Links to an external site.)
  - Adobe Acrobat Reader (Links to an external site.)
  - Zoom (Links to an external site.)

Additional requirements if you are using your own computer: (See this link from ESRI)

Operating System	Windows 10, Windows 11, Pro and Enterprise (64 bit)
Processor	2 GHz or higher
Memory	Recommended 32 GB of RAM
Graphics Card	NVIDIA or AMD is required to work properly with some of the ESRI ArcGIS extensions.
Hard Drive Space	60GB free disk space
Plug-ins	Adobe Reader [Download from Adobe]
Additional Software	Java 1.7 or later (https://java.com/en/download/), Adobe Acrobat Reader

Speakers	Required (or headphones)
Monitor	Capable of at least 1024 x 768 resolution

Accessing the Software

Access to software is the responsibility of individual students. Please plan ahead as the CR remote lab will require stable internet access to run the software. If you have the software downloaded onto your personal computer, you can use it while offline/out of service, as long as all your data files are downloaded prior to starting a project.

Computers on Campus

There are computers with ArcGIS software available to use in the library on campus. If your computer is not able to run ArcGIS PRO please plan to use the computers available in the library or the remote lab. There are also laptops available for loan through the CR Online Learning Support which can support the remote lab.

Advisory preparation

Experience and competence working with modern computers and navigating external software. Students may struggle to succeed without a basic understanding of computer technology and the internet.

Course Calendar & Format Information:

Course Schedule: Everything for this course happens in Canvas. You will find all pertinent information regarding the schedule within our Canvas course. Please be sure to check Canvas often!

Course Format: Each week we will review concepts and labs from the required text. You will typically have a module quiz, a discussion (in class activity or online), and a lab assignment due each week. Please be sure to check the Canvas Modules for the most current due dates.

This semester FNR31 is a 'Hybrid' modality- which includes a synchronous 2.5-hour period and an asynchronous 2.5-hour period each week. My goal is to use our scheduled time together to cover the most important portions of the course, as such, the in-person sessions may vary in format by week. Check Canvas for the asynchronous portion, it will be completed online and may be in the format of flipped lecture, additional reading requirements, videos, or discussion. Always be sure to attend our in-person sessions, as well as complete the asynchronous portion of the class, both are imperative to your success in this course.

The expected workload for CR Courses is calculated at 3 hours per week for each unit in a standard 16-week course. For the combined lecture and lab, this amounts to nine hours per week. This may be more or less hours depending on your learning style and inevitable technical challenges with internet/software etc. It is recommended that you plan to spend 9-12 hours outside of class for this course.

Lecture: The lecture materials include readings, videos, pre-recorded lectures, and guest lectures. I will provide online content at the start of the week on Monday. Plan to check Canvas often, and always be sure to check before our scheduled meeting session.

Lab activities: The lab activities are designed to reinforce course material using GIS software and intended to strengthen the concepts in the reading material. Each module has one or more associated lab activities where you will access the software and spend time developing your skills in ArcGIS Pro. These will be provided in Canvas and are the bread and butter of your grade, please be sure to stay on top of these.

Emails: Please reach out whenever you have questions, get stuck, or need to communicate with me directly with your CR email (avoid Canvas). When sending an email, please be sure to **label the Subject line as "FNR 31 ONL_additional info_"** to ensure your email gets flagged.

Evaluation & Grading Policy

Grading

Type	Percentage of final grade
Lab assignments	40%
In-class activities/ Discussions	10%
Exams & Final Project	25%
Quizzes	20%
Participation/Professionalism	5%
Grand total	**100%**

Grading Scheme

A: 94-100, A-: 90-<94, B+: 87-<90, B: 84-<87, B-: 80-<84, C+: 77-<80, C: 70-<77, D: 60-<70, F: <60

Late/missing work policy: Assignments and quizzes are to be completed and turned in by the date indicated. Please plan ahead, as late assignments will be penalized and lose 5% for each day they are late up. Work submitted 10 or more days past the deadline will receive a 50% deduction. No late work is

accepted after 20 days past the due date. If a serious and compelling issue should arise and prevent you from turning in an assignment on time (e.g. death in the family, hospitalization), please contact me in advance and we will work out an alternative plan. Please see me immediately if something in the foreseeable future is approaching. Deadline extensions are granted in the case of a legitimate excused absence, please reach out 48 hours before the deadline for an extension. My goal is to help every student effectively learn and grow in this course, as such, I will remain open and flexible.

Drop Policy: You may be dropped from the class if you miss 3 or more weeks of class participation, discussion, assignments or labs prior to the end of week 10.

Academic Dishonesty: All assignments must be completed individually and should represent your own effort and understanding. Instances where it is clear that work has been shared and copied, or otherwise derived from other's work, will result in both students receiving a clear warning and a zero on the assignment. A second instance will result in failure of the class and reported to the University.

Educational Accessibility & Support

College of the Redwoods is committed to providing reasonable accommodations for qualified students who could benefit from additional educational support and services. You may qualify if you have a physical, mental, sensory, or intellectual condition which causes you to struggle academically, including but not limited to:

- Mental health conditions such as depression, anxiety, PTSD, bipolar disorder, and ADHD
- Common ailments such as arthritis, asthma, diabetes, autoimmune disorders, and diseases
- Temporary impairments such as a broken bone, recovery from significant surgery, or a pregnancy-related disability
- A learning disability (such as dyslexia, reading comprehension), intellectual disability, autism, or acquired brain injury
- Vision, hearing, or mobility challenges

Available services include extended test time, quiet testing environments, academic assistance and tutoring through the LIGHT Center, counseling and advising, alternate formats of course materials (e.g., audio books, braille, E-texts), assistive technology, learning disability assessments, approval for personal attendants, interpreters, priority registration, on-campus transportation, adaptive physical education and living skills courses, and more. If you believe you might benefit from disability- or health-related services and accommodations, please contact Student Accessibility Support Services (SASS). If you are unsure whether you qualify, please contact Student Accessibility Support Services (SASS) for a consultation: sass@redwoods.edu.

SASS office locations and phone numbers

Eureka campus

- Phone: 707-476-4280
- Location: Student Services Building, first floor

Del Norte campus

- Phone: 707-465-2324
- Location: Main Building, next to the library

Klamath-Trinity campus

- Phone: 707-476-4280

Student Support Services

Good information and clear communication about your needs will help you be successful. Please let your instructor know about any specific challenges or technology limitations that might affect your participation in class. College of the Redwoods wants every student to be successful.

The following online resources are available to support your success as a student:

CR Online Learning Support

Tech support, laptop loans, guides to using Canvas, installing Office 365 for free, and more.

Library Articles & Databases

Find the best library databases for your research.

Online Tutoring Resources

Participate in tutoring over Zoom.

To learn more about the resources available to you, click on a title bar below, or click the down arrow to expand them all.

Klamath-Trinity students can contact the CR Klamath-Trinity Office for specific information about student support services at 530-625-4821.

Community College Student Health and Wellness

National Suicide Prevention Lifeline

If you are in distress or are with someone at risk right now, call or text the National Suicide Prevention Lifeline.

Call the National Suicide Prevention Lifeline
1-800-273-TALK (8255)

Text the National Suicide Prevention Lifeline
741-741

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Timely Care

When you're not feeling well physically or distressed mentally, Timely Care can offer the help you're looking for in just a few quick taps. Students can schedule an appointment anytime via phone, video, and chat. Log in or set up an account with Timely Care.

Mental Health Counseling

Students should text, email, or fax Shawna Bell directly for scheduling and/or services.

Text: 707-496-2856
Email: shawnabmft@gmail.com
Fax and voicemail: 707-237-2318

Wellness Central

Resources, tools, and trainings regarding health, mental health, wellness, basic needs and more designed for California community college students, faculty and staff are available on the California Community Colleges Wellness Central.

Counseling

Counseling and Advising can assist students in need of academic advising and professional counseling services. Call, email or stop by one of our offices to make an appointment!

Counseling and Advising office locations and contact info

Eureka campus

- Phone: 707-476-4150
- Location: Student Services Building, first floor
- Email: counseling@redwood.edu
- Hours: Monday through Friday, 9am to 4pm. Summer hours may vary

Del Norte campus

- Phone: 707-476-2300
- Location: Main Building, next to the library
- Hours: Summer hours may vary

Klamath-Trinity campus

- Phone: 530-625-4821
- Email: KT-staff@redwoods.edu
- Hours: Summer hours may vary

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Basic Needs Center

The Basic Needs Center provides for the health and safety of students by providing access to healthy food, financial resources, and referrals to safe and secure housing. Submit a request for services and information.

Basic Needs Center contact info

- Phone: 707-476-4153
- Email: retention@redwoods.edu

Learning Resource Center

The Learning Resource Center includes the following resources for students:

Library Services

Library Services promotes information literacy and provides organized information resources.

Academic Support Center

The Academic Support Center offers tutoring and test proctoring for CR students.

Student Tech Help

Student Tech Help provides students with assistance around a variety of tech problems.

Extended Opportunity Programs and Services (EOPS)

Extended Opportunity Programs and Services (EOPS) provides services to eligible income disadvantaged students including: textbook awards, grants, career academic and personal counseling, transportation assistance, tutoring, laptop, calculator and textbook loans, priority registration, graduation cap and gown, workshops, and more!

TRiO Student Success Program

The TRiO Student Support Services Program provides eligible students with a variety of services including academic advising, career assessments, assistance with transfer, and peer mentoring. Students can apply for the program with the Eureka TRiO office or the Del Norte TRiO office.

Veterans Resource Center

The Veteran's Resource Center supports and facilitates academic success for Active Duty Military,

Veterans and Dependents attending CR through relational advising, mentorship, transitional assistance, and coordination of military and Veteran-specific resources.

CalWORKS

California Work Opportunity & Responsibility to Kids (CalWORKs) provides supportive services to student parents with children under the age of 18, who are receiving cash assistance (TANF benefits), to become self-sufficient. Services include: transportation assistance, basic student supplies, tutoring, priority registration, laptop and calculator loans, career, academic, and personal counseling, and more!

Academic dishonesty

In the academic community, the high value placed on truth implies a corresponding intolerance of scholastic dishonesty. In cases involving academic dishonesty, determination of the grade and of the student's status in the course is left primarily to the discretion of the faculty member. In such cases, where the instructor determines that a student has demonstrated academic dishonesty, the student may receive a failing grade for the assignment and/or exam and may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct (AP 5500) is available on the College of the Redwoods website. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the 2023-2024 College Catalog and CR Board and Administrative Policies.

AI Use Class Policy

Recent advancements in generative artificial intelligence (AI) have made large language models such as ChatGPT and Google's Bard widely available. However, overuse of these tools in this class can undermine your learning and curtail the development of your critical and creative thinking skills. In addition, AI outputs are often unreliable and frequently subject to bias. For these reasons, the policy of this class is that AI cannot be used at any point in the completion of class assignments, including discussion posts. Any or all of your assignment submissions and discussion posts may be screened by AI detection software, but the real penalty for AI misuse is that you will miss out on an opportunity to learn.

Disruptive behavior

Student behavior or speech that disrupts the instructional setting will not be tolerated. Disruptive conduct may include, but is not limited to: unwarranted interruptions; failure to adhere to instructor's directions; vulgar or obscene language; slurs or other forms of intimidation; and physically or verbally abusive behavior. In such cases where the instructor determines that a student has disrupted the educational process, a disruptive student may be temporarily removed from class. In addition, the student may be reported to the Chief Student Services Officer or designee. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the 2025-26 College Catalog and CR Board and Administrative Policies.

Inclusive Language in the Classroom

College of the Redwoods aspires to create a learning environment in which all people feel comfortable in contributing their perspectives to classroom discussions. It therefore encourages instructors and students to use language that is inclusive and respectful.

Setting Your Preferred Name in Canvas

Students have the ability to have an alternate first name and pronouns to appear in Canvas. Contact Admissions & Records to request a change to your preferred first name and pronoun. Your Preferred Name will only be listed in Canvas. This does not change your legal name in our records. See the Student Information Update form.

Canvas Information

Log into Canvas at My CR Portal
For help logging in to Canvas and general tech help, visit Student Technical Support
Once you're logged in to Canvas, you click on the Help icon on the left menu
Canvas online orientation workshop: Canvas Student Orientation Course

Setting Your Preferred Name and Pronouns in Canvas

Students have the ability to display personal pronouns and an alternate first name in Canvas. Students may change their pronouns on their own in Canvas (Account :: Settings :: Edit Settings). To request a change to your preferred list name, contact Admissions & Records. Your Preferred Name will only be listed in Canvas; this does not change your legal name in our records. See the Student Information Update Form (pdf).

Emergency Procedures / Everbridge

College of the Redwoods has implemented an emergency alert system called Everbridge. In the event of an emergency on campus you will receive an alert through your personal email and/or phones. Registration is not necessary in order to receive emergency alerts. Check to make sure your contact information is up-to-date by logging into WebAdvisor and selecting 'Students' then 'Academic Profile' then 'Current Information Update.'

Please contact Public Safety at 707-476-4112 or security@redwoods.edu if you have any questions. For more information visit Redwoods Public Safety.

In an emergency that requires an evacuation of the building anywhere in the District:

- Be aware of all marked exits from your area and building
- Once outside, move to the nearest evacuation point outside your building
- Keep streets and walkways clear for emergency vehicles and personnel

Do not leave campus, unless it has been deemed safe by the campus authorities

Admissions deadlines & enrollment policies

Fall 2025 Dates
09/01 – Labor Day – Campus Closed
09/07 – last day to add classes*
09/07 – last day to drop without a W grade*
09/08 – CENSUS DAY*
09/15 – census rosters are due*
10/30 – last day to petition to graduate with a fall graduation date
10/31 – last day for student/faculty withdrawal
11/11 – Veteran's Day – Campus Closed
11/24 & 11/25 – Fall Break – no classes
11/26 – 11/28 – Thanksgiving – campus closed
12/13 to 12/19 – final exams
12/19 - Last day to file P/NP
12/19 – semester ends
12/22 to 12/26 – campus closed
12/26 – **GRADES DUE**

Course Outline and Objectives

Course Objectives

- Design a cartographically correct map.
- Use GPS technology by collecting, analyzing, and displaying data.
- Learn basic skills in the use of ArcGIS by gathering, loading, analyzing, and interpreting spatial data.
- Use the electromagnetic spectrum in remote sensing technology.
- Apply discipline-specific vocabulary, principles, methodologies and ethics to social science inquiry
- Explain connections between geospatial data, maps and society including social, political and economic events.
- Demonstrate how to identify and measure features with image interpretation and photogrammetry.

Course Outline for lecture and lab

Topic Outline

1. Understanding Geospatial Data
    a. The Geospatial Sciences
        i. Primary Geospatial Sciences
        ii. Secondary Geospatial Sciences
    b. Properties of Geospatial Data
        i. Applications for Geospatial Data
    c. Geospatial Data Models
        i. The Vector Data Model
        ii. The Raster Data Model
        iii. Raster versus Vector
    d. File Management Basics
    e. Precision and Accuracy
    f. Common Geospatial Data Sources
2. Social Science Principles, methodologies and value systems
    1. Data Acquisition
    2. Considerations for cultural and social organizations- use of maps by diverse peoples including ethnic or cultural groups.
3. Geodesy and Transformation
    a. Measuring Earth
    b. Common Geodetic Datums
        i. North American Datum of 1927
        ii. North American Datum of 1983
        iii. World Geodetic System 1984
    c. Parallels and Latitude
    d. Meridians and Longitude
    e. Geometric Transformations
        i. The Developable Surfaces
        ii. Aspect and Case
4. Map Scale and Spatial Reference Systems
    a. Map Scale
        i. Representative Fraction
        ii. Verbal Scale
        iii. Scale bar
    b. Scale Factor
    c. Land Partitioning Systems
    d. Geographic Coordinate Systems (GCS)
        i. Converting to Decimal Degrees
    e. Projected Coordinate Systems (PCS)
        i. Universal Transverse Mercator
        ii. State Plane Coordinate System
5. Mobile Mapping
    a. Direction Systems
    b. Indicating Direction
        i. Azimuth
        ii. Bearings
6. Image Acquisition and Interpretation

    a. Electromagnetic Spectrum
    b. Image Formats
    c. Small Unmanned Aircraft Systems
    d. Image Interpretation
2. Database Management Systems
3. Vector-Based Analysis
    a. The Database
    b. Geospatial Queries

        i. Attribute Queries
        ii. Spatial Query Operations
    c. Geospatial Analysis
        i. Spatial Analysis Operations
4. Communication and Design
    a. Cartographic Conventions
    b. Common Map Elements
    c. Visual Hierarchy
    d. Understanding Color
    e. Typography
    f. Typographic Design and Communication
    g. Classification and Visualization

Lab Outline

The following is a list of topics that must be covered in this course.
Topic Outline

1. Managing geospatial data using ArcGIS
    a. Setting up your workspace
    b. Downloading data
    c. Decompression of files
    d. Managing data using windows file explorer
    e. Inspecting the metadata
    f. Adding data to software
    g. Exploring the ArcGIS user Interface
    h. Compressing the workspace folder using 7z or zip software
    i. Documenting data quality
2. Documenting data quality
3. Learning about projections
4. Working with scale and spatial reference systems
5. Mapping using GPS
    a. Create a cartographically sound map using collected GPS points
6. Remote Sensing
    a. Georeference a historical photograph
    b. Explore Landsat
7. Social and natural resources mapping scenario
    a. Downloading social and natural resources data
    b. Perform a table join
    c. Perform a query
    d. Using graduated symbols
    e. Preparing the layout
    f. Apply cartographic principles
    g. Exporting map as a PDF file
8. Final Project
    a. Develop a social science or natural resources related inquiry for mapping
    b. Source secondary data or collect primary data to use for final map
    c. Utilize multiple geoprocessing tools for analysis
    d. Prepare a complete written final technical report using APA citations to support
    e. Develop small-sized cartographically sound map for technical report