# Syllabus - NR 218 - Introduction to GIS - Fall 2025

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## Class Details

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- Building 180 (Baker Hall)
  Room 230
- Times:
  - Monday:
    5:10 - 6:00 Lecture
    6:10 - 9:00 Lab
  - Wednesday
    6:10 - 9:00 Lab

## Instructor Details

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- Michael Huggins
- Office Hours:
  - Building 72 (Plant Conservatory) Room 107
    Mondays 2:30 - 4:30s

## Learning Goals

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- Analyze spatial data
- Create maps using geospatial software
- Produce quality graphics
- Apply skills in remote sensing, GIS, and data science to solve a problem of your own design
- Understand basic principles of GIS

## Project Assignments

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This course centers on a series of 4 projects using different types of GIS data. The projects build on one another and you will learn new skills for each project. Plenty of class time will be spent on project work. Each student should hand in their own projects. Projects are due every other week (see calendar for dates). Late assignments will be deducted 5% per day late.

There is also a final project as well as an exam.

For your final project you will propose a novel GIS question and collect or analyze data to answer it.

## Assignment Weight

| Assignment | Percentage of Grade | Description |
| --- | --- | --- |
| Project 1 | 10 | Mapping |
| Project 2 | 10 | Vector Data Analysis |
| Project 3 | 10 | Raster Data Analysis |
| Project 4 | 15 | Remote Sensing, Image Analysis, and Modeling |
| Final Project | 25 | ```
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# NR 218
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| Exam | 20 | Will be hard, but curved |
| Participation | 10 | Will be based on exit tickets and engagement |
| Assignment 0 | 1 (bonus) | Easy bonus points |

## Grading

A: ≥ 90%
B: ≥ 80%
C: ≥ 70%
D: ≥ 60%
F: < 60%

Total 100%

Note: Grading is not curved (Except exam).

## Assignment Submission Policy

Assignments (except the final project) will be submitted on Canvas. Students are allowed a 48-hour 'no questions' asked grace period on assignment submissions. You do not need to give any reason as to why your submission is late, as long as it is submitted within 48 hours of the deadline.

## Attendance Policy

Before leaving for each class you will need to turn in an "exit ticket". The exit ticket is simply a short answer to a question that will given in class. The exit ticket will let me know that you were in class, and help me to gauge how well students are absorbing the material. You are allowed 3 unexcused absences. Beyond 3 unexcused absences, you will be deducted 2% of the total grade for each unauthorized absence.

## Academic Integrity

All students should be familiar with and adhere to the university's academic integrity policy, which can be found here: https://osrr.calpoly.edu/academic-integrity

## Use of AI

AI generated text **may not be used** for any writing.

Students can seek AI assistance for project work, but it is important to consider that AI will make you stupid and waste your time! + Depending on AI prevents development of critical thinking, writing, and problem-solving skills + AI will sometimes lead you down a terrible, deep rabbit hole of confusion + Getting quick answers without working through problems will leave gaps in foundational knowledge needed for advanced coursework + The struggle of working through difficult concepts is often where the most valuable learning occurs

That is not to say LLMs are never useful or appropriate to use, but you need to know their limitations.

## Textbook

We will read Essentials of Geographic Information Systems during this course. A free and online version of the textbook can be found [here](#)

## Tutorials

We will refer to a number of tutorial videos which describe QGIS processing. These will come primarily from two sources:

[Ujaval Gandhi's QGIS Tutorials and Tips](#)

[QGIS Training Manual](#)

There are many other helpful sources of information on GIS Software

[Spatial Thoughts](#)introduction-to-qgis.html

[A Gentle Introduction to GIS](#)gentle_gis_introduction/index.html

# Fall Term Calendar 2025

Here's the table with the Week column containing just the integer week values:

| Date | Week | Description | Reading | Due Dates |
|------|------|-------------|---------|-----------|
| September 22 | 1 | What is GIS Why is it important | Chapters 1 and 2 | |
| September 24 | 1 | Basic GIS Concepts Scale, Coordinate systems, and Map Projections | | |
| September 29 | 2 | Scale, Coordinate systems, and Map Projections / Spatial Data Models and Formats | chapters 3 and 4 | |
| October 1 | 2 | Vector and Raster Data | | |
| October 6 | 3 | Finding Acquiring, Creating, and Editing GIS Data | chapters 5 and 6 | [Project 1](#) |
| October 8 | 3 | GeoProcessing and Vector Operations | | |
| October 13 | 4 | Remote Sensing 1 | chapters 7 and 8 | |
| October 15 | 4 | Remote Sensing 2: Spectral Indices, Elevation Data | | [Final Project Brainstorm Due](#) |
| October 20 | 5 | Spatial Analysis: Map Algebra, Reprojection, Resampling; Final Project Discussion | chapters 9 and 10 | [Project 2](#) |
| October 22 | 5 | Spatial Analysis Continued | | |

| October 27 | 6 | Statistics 101, Raster $\times$ Vector Operations, Zonal Statistics, Point Sampling | |
| --- | --- | --- | --- |
| October 29 | 6 | Raster $\times$ Vector Operations, Zonal Statistics, Point Sampling, continued | Final Project Outline Due |
| November 3 | 7 | Rasterizing by Attributes, Georeferencing | |
| November 5 | 7 | Open lab time | Project 3 |
| November 10 | 8 | Spreadsheets, ArcGIS, Google Earth Engine | |
| November 11 | 8 | Academic holiday - Veterans Day observed | |
| November 12 | 8 | No Class | |
| November 17 | 9 | Project work | |
| November 19 | 9 | Project work | Final Project Draft [optional] |
| November 24 | | Fall Break | |
| November 26 | | Fall Break | |
| December 1 | 10 | Project 4 Discussion | Project 4 |
| December 3 | 10 | Exam. Final Project Presentations, project 4 Solution | Final Project |