

Fall 2018 Introduction To Geographic Information Systems

You can solve spatial problems!

<http://dverbyla.net/nrm338/>

3 credits: 2 lectures, 1 computer lab per week

Lectures: Tuesday/Thursday, 9:45-11:15am Reichardt Building Room 202

Lab: Tuesday 2-5PM ONeill 359

Instructor: Dave Verbyla, Professor, ONeill Building, Room 368

Phone: 474-5553 (but Email is much preferred instead of telephone tag!)

Email: dverbyla@alaska.edu.

Dave's Office Hours: ONeill 368 Tues/Thurs 8:30-9:30 am or by email appointment.

Teaching Assistant: Jason Clark.

Course Description: This course is designed for geographers, wildlife biologists, fisheries biologists, ecologists, natural resource managers, geologists and field-oriented professionals who use spatial technologies in their jobs. Spatial technologies are especially important in Alaska, where road-access is typically limited. Our emphasis in this course is on obtaining and using Alaskan geographic data.

I can provide you with a student-version of ArcGIS if you own a windows-based computer.

If you want, you can use your own computer during lab. Also you can work with a partner in lab.

Course Objectives:

1) To learn how to solve spatial problems using GIS.

- 2) To understand basic concepts independent of any particular software.**
- 3) To learn ArcMap GIS through hands-on computer lab exercises.**
- 4) To learn how to download and used Alaskan geospatial data.**

Grades Based on total points as follows:

- **12 blackboard-based quizzes (<https://classes.alaska.edu/>) 20 points each = 240 points**
 - **Quiz 1 Due Tuesday 11-Sept-2018 5pm**
 - **Quiz 2 Due Tuesday 25-Sept-2018 5pm**
 - **Quiz 3 Due Tuesday 2-Oct-2018 5pm**
 - **Quiz 4 Due Tuesday 9-Oct-2018 5pm**
 - **Quiz 5 Due Tuesday 16-Oct-2018 5pm**
 - **Quiz 6 Due Tuesday 23-Oct-2018 5pm**
 - **Quiz 7 Due Tuesday 30-Oct--2018 5pm**
 - **Quiz 8 Due Tuesday 6-Nov-2018 5pm**
 - **Quiz 9 Due Tuesday 13-Nov-2018 5pm**
 - **Quiz 10 Due Tuesday 20-Nov-2018 5pm**
 - **Quiz 11 Due Tuesday 27-Nov-2018 5pm**
 - **Quiz 12 Due Tuesday 4-Dec-2018 5pm**
- **On-line Mid-Semester Exam= 100 points**
- **On-line GIS Final Exam: 100 points**
- **Class Participation: 100 points**
- **Total points possible = 540 points**

Final grades will be based on total points earned in the course as follows:

> 485 total points = A

445 to 485 total points = B

400 to 444 points = C

350 to 399 total points = D

< 350 total points = F

Disability Services: We will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to to any student with a disability.

Please inform us the first week of class if you have a disability that we should be aware of.

Textbook: None---weekly web site readings

Fall 2018 Schedule			
Date	Lectures	Thursday's Spatial Problems	Lab
Aug 28 - 31	Course Overview Course Learning Map Demo lab1	KEY: Week1 Spatial Problems	Lab1: Introduction to ArcGIS
Sept. 4-6	Five Dimensions of GIS: • Location • Distance • Measures • Depth • Time	KEY Week 2 Spatial Problems	Lab2: Five Dimensions of GIS
Sept. 11-13	GIS Coordinates and Projections Youtube lectures: 1) Geographic Coordinate Systems 2) Horizontal Datums 3) Alaska Albers NAD83 Coordiantes 4) UTM NAD83 Coordinates 5) Alaska State Plane NAD83 Coordinates	Week3 Spatial Problems	Lab 3: GIS Coordinate Systems and Projections

Sept. 18-20	GIS Features(points,lines,polygons) Youtube video sessions: 1. Point Feature Classes in ArcGIS 2. Polyline Feature Classes in ArcGIS 3. Polygon Feature Classes in ArcGIS	Week4 Spatial Problems	Lab 4: GIS Feature Data Formats
Sept 25-27	No NRM338 classes this week	No NRM338 classes this week	No NRM338 classes this week
Oct. 2-4	GIS attribute tables Youtube session: 1. Stand-alone tables in ArcGIS	Week5 GIS Tables Problems	Lab 5: Tabular Analysis
Oct. 9-11	Editing shapefile points, lines, polygons Youtube video sessions: Arcmap hyperlinks Editing points, lines, polygons	Week6 Editing GIS Problems	Lab 6: Editing Shapefiles
Oct. 16-18	Geodatabases Youtube video sessions: 1. Geodatabase Containerin ArcGIS 2. Range and Coded Domains 3. Feature Dataset Topology	Week7 Geodatabase Problems	Lab 7: Geodatabases
Oct. 23 -25	Example mid-semester exams	GIS Exam Problems:	Mid-Semester Exam during lab
Oct. 30-Nov. 1	Raster Surprises Elevation Rasters Youtube lectures: 1) Processing Digital Elevation Models	Elevation Raster Problems	Lab 8: Elevation Rasters

	2) Elevation Geoprocessing Analysis		
Nov. 6-8	Georeferencing Rasters Youtube video sessions: 1. Georeferencing Model 2. ArcMap Georeferencing Toolbar	Georeferencing Problems	Lab 9: Georeferencing Rasters
Nov. 13-15	Supervised Classification Youtube video sessions: 1. Supervised Classification 2. Estimating Classification Accuracy	Image Classification Problems	Lab 10: Raster imagery: classification and accuracy assessment
Nov. 20-21	Feature Analysis Youtube video sessions: 1. Distance Geoprocessing Tools 2. Overlay Geoprocessing Tools	Thanksgiving Holiday !	Lab 11: Feature Analysis
Nov 27 - 29	Map Layouts : Map Layout For Landscape Change Animation Time enabled layers: Alaska Wildfires Since 2000 Study area Map Layout	Feature Analysis Spatial Problems	Lab 12: Map Layout
Dec. 4-6	Example Final Exams : Practice Final 1: Invasive Weed Locations Along Haul Road Practice Final 2: Barley Fields Mean Soil pH and Yield Practice Final 3: Shorebirds Mean Distance to Low Tide Line Practice Final 4: Churchill River KM By Province	Final Exam during lab	Final Exam during lab

Email: [Dave Verbyla \(dlverbyla@alaska.edu\)](mailto:dlverbyla@alaska.edu).
