

Fall 2016 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 Reichart Building Room 202

Lab: Tuesday 2-5PM O'Neill 359

or Weds 11:15AM-2:15PM O'Neill 359

Instructor: Dave Verbyla, Professor, O'Neill Building, Room 368

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

Email: dverbyla@alaska.edu.

Dave's Office Hours: O'Neill 368 Mondays 1-2pm or by email appointment..

Teaching Assistant: Lauren Lynch Email: lrlynch2@gmail.com

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.

[Welcome Video Clip](#)

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 20 points each = 240 points**
 - **Quiz 1 Due Tuesday 13-Sept-2016 9am**
 - **Quiz 2 Due Tuesday 27-Sept-2016 9am**
 - **Quiz 3 Due Tuesday 4-Octt-2016 9am**
 - **Quiz 4 Due Tuesday 11-Oct-2016 9am**
 - **Quiz 5 Due Tuesday 18-Oct-2016 9am**
 - **Quiz 6 Due Tuesday 25-Oct-2016 9am**
 - **Quiz 7 Due Tuesday 1-Nov-2016 9am**
 - **Quiz 8 Due Tuesday 8-Nov-2016 9am**
 - **Quiz 9 Due Tuesday 15-Nov-2016 9am**
 - **Quiz 10 Due Tuesday 22Nov-2016 9am**
 - **Quiz 11 Due Tuesday 29-Nov-2016 9am**
 - **Quiz 12 Due Tuesday 6-Dec-2016 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 2016 Schedule			
Date	Lectures	Thursday's Spatial Problems	Lab
Aug 30 - Sept 1	Course Overview Course Learning Map Demo lab1	Week1 Spatial Problems Key: Week1 Spatial Problems	Lab1: Introduction to ArcGIS
Sept. 6-8	Five Dimensions of GIS: • Location • Distance • Measures • Depth • Time	Week2 Spatial Problems KEY Week2 Spatial Problems	Lab2: Five Dimensions of GIS
Sept. 13-15	GIS Coordinates and Projections Youtube lectures: 1) Geographic Coordinate Systems 2) Horizontal Datums	Week3 Spatial Problems KEY:Week3 Spatial Problems	Lab 3: GIS Coordinate Systems and Projections

	3) Alaska Albers NAD83 Coordinantes 4) UTM NAD83 Coordinates 5) Alaska State Plane NAD83 Coordinates		
Sept. 20- 22 No Class or Lab this Week!			
Sept. 27- 29	GIS features data:: 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
Oct. 4-6	GIS attribute tables Youtube session: 1. Stand-alone tables in ArcGIS	Week5 Spatial Problems	Lab 5: Tabular Analysis
Oct. 11-13	Editing shapefile points, lines, polygons Youtube video sessions: Arcmap hyperlinks Editing points, lines, polygons	Week6 Spatial Problems	Lab 6: Editing Shapefiles
Oct. 20-22	Geodatabases Youtube video sessions: 1. Geodatabase Containerin ArcGIS 2. Range and Coded Domains 3. Feature Dataset Topology	Week7 Spatial Problems	Lab 7: Geodatabases
	Example mid-semester exams		

Oct. 27 - 29		More Spatial Problems	Mid-Semester Exam during lab
Nov. 1-3	Elevation Rasters Youtube lectures: 1) Processing Digital Elevation Models 2) Elevation Geoprocessing Analysis	Elevation Raster Problems	Lab 8: Elevation Rasters
Nov. 8-10	Georeferencing Rasters Youtube video sessions: 1. Georeferencing Model 2. ArcMap Georeferencing Toolbar	Georeferencing Problems	Lab 9: Georeferencing Rasters
Nov. 15-17	Supervised Classification Youtube video sessions: 1. Supervised Classification 2. Estimating Classification Accuracy	Image Classification Problems	Lab 10: Raster imagery: classification and accuracy assessment
Nov. 22-23	Feature Analysis Youtube video sessions: 1. Distance Geoprocessing Tools 2. Overlay Geoprocessing Tools	Thanksgiving Holiday	Lab 11: Feature Analysis
Nov 29 - Dec 1	Map Layouts	Feature Analysis Spatial Problems	Lab 12: Map Layout
Dec. 6-8	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	Final Exam durng lab	Final Exam durng lab

Practice Final 4: Churchill River KM By Province		
Class evaluations		

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