ERTH 461 Geospatial Information

The goals of this course are to convince students that they should collect field data in a spatially-quantitative manner (i.e., with GPS), and that once those data are collected, to teach them how to store, analyze, and manipulate those data (i.e., with GIS and other spatial-processing software). Mahalo to Chad Morita for lots of computer help!!

Scott Rowland, Geology & Geophysics Dept., POST 617-A, 956-3150, ***scott@hawaii.edu***

text: Mastering ArcGIS (7th Edition), by Maribeth Price

http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#/Welcome_to_the_ArcGIS_Help_Library/00r90000001n000000/

# date	topic(s)	readings	SLO*
Week 1	*Intro, outline of course, UTM, digital analysis of data with ENVI, Excel, Matlab, whatever*		
	GPS		2, 5
Week 2	*Hand-held GPS (outside)*	*Chapter 1*	*1, 5*
	Map datums and projections	Chapter 11	2
Week 3	*Field data collection (in the field somewhere – **it will be hot**)*		*2, 3, 5*
	Shape files, tables, raster data	Chapter 4	2
Week 4	*Importing field data to ArcGIS*	*Chapter 2*	*2*
	Editing	Chapter 12	2
Week 5	*Editing, symbolizing*	*Chapters 12, 13*	*2, 5*
	Elevation and DEMs		
Week 6	*Geo-registering, mosaicing with ICE*		*2, 5*
	Interpolation of point and line data		2, 3, 5
Week 7	*Hawai'i GIS data, Making Pretty Maps*	Chapter 3	2
	Topology	Chapter 13	1, 3, 5
Week 8	*Geologic Map I: digitizing contours*		*2, 5*
	Queries, Selections	Chapters 5, 6	2
Week 9	*Geologic Map II: interpolating contours to TIN, Raster*		*2, 5*
	GIS on the UH Mānoa campus **(Noweo Kai and Julius Paulo)**		
Week 10	*Geologic Map III: drawing geology, symbolizing*		*2, 5*
	Tables, Joins	Chapters 5, 6	2
Week 11	*Geologic Map IV: Querying Data: Shape files*	*Chapter 7*	*2, 3, 5*
	Exam review		
Week 12	***ELECTION DAY** (No vote? No grumble!)*		
	MIDTERM EXAM		
Week 13	*Geologic Map V: Querying Data: Rasters*	*Chapter 8*	*2, 3, 5*

	GIS and Land-use planning **(Amy Kitchner)**	2, 3
Week 14	*Geologic Map VI: Hydrology, Viewsheds*	*2, 3, 5*
	THANKSGIVING	
Week 15	*FLOWGO, Hazard mitigation*	
	Network Analysis	2, 5
Week 16	*Volume Calculations with Arc and ITAS*	2, 5
	Final project review	
Week 17	**FINAL PROJECT DUE (Wednesday, 4:00 pm)**	

CLOs – course learning Objectives: The goal of this course is for students to learn the importance and utility of collecting spatially-quantitative data. Specifically this means plotting and collecting coordinates while in the field so that field data can later be input and processed using mapping software (GIS). Students will learn how to manipulate, analyze, and display these data, and use these techniques to solve real-world geological problems.

***SLOs - Student Learning Objectives**

Earth Sciences undergraduate courses have to consider how they address a number of SLOs, which the Department has decided are key attributes and/or abilities of any Earth Sciences graduate:

1. Students can explain the relevance of Earth sciences to human needs, including those appropriate to Hawaii, and be able to discuss issues related to geology and its impact on society and planet Earth.
2. Students can apply technical knowledge of relevant computer applications, laboratory methods, and field methods to solve real-world problems in Earth Sciences.
3. Students use the scientific method to define, critically analyze, and solve a problem in Earth science.
4. Students can reconstruct, clearly and ethically, geological knowledge in both oral presentations and written reports.
5. Students can evaluate, interpret, and summarize the basic principles of the Earth sciences, including the fundamental tenets of the sub-disciplines, and their context in relationship to other core sciences, to explain complex phenomena.

ILOs – Institutional Learning Objectives: Students will gain *specialized knowledge* about how GPS receives work and how they can be used to collect quantitative position information. They will then import these data to GIS software and manipulate the data to help *answer questions about the physical and natural world*. They will learn how to *communicate their results* by creating useful and legible maps. Many of the techniques are used to solve environmental problems, leading to *better stewardship of our natural world*.

If you have a disability and related access needs the Department will make every effort to assist and support you. For confidential services, students are encouraged to contact the Office for Students with Disabilities (known as Kōkua) located on the ground floor (Room 013) of the Queen Lili'uokalani Center for Student Services.

Title IX: The University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:
As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need. If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, use the confidential resources available here: http://www.manoa.hawaii.edu/titleix/resources.html#confidential If you wish to directly REPORT an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence or stalking as well as receive information and support, contact: Dee Uwono,Title IX Coordinator (808) 956-299 t9uhm@hawaii.edu