Geographic Information Systems (GEOL-ENVS 403/503)

LECTURE SCHEDULE

Date		Topic	Chapter	Reading
August	26	Course expectations/organization; introduction		
	28	GIS overview and history	1	pp. 1-30
September	2	Coordinate systems and projections I (spatial data, scale, resolution, accuracy)	3	pp. 77-99
	4	Coordinate systems and projections II (projections, coordinate systems, datum, calculations)		
	9	Data display, cartography, and visualization	4	pp. 107-161
	11	Database management concepts I (DBMS, files, records & fields, data models, relational databases)		
	16	Database management concepts II (joins & relates)		
	18	Raster basics I (representation, storage, image formats)	2	pp. 31-33, 55-62
	23	Raster basics II (compression, projection, conversion)	7	pp. 231-244
	25	Raster data analysis I (single map, statistics, buffers)	7	pp. 244-265
	30	Raster data analysis II (dual map, map algebra)	8	pp. 323-353
October	2	Vector basics (approaches, vectors vs raster, formats)	2, 6	pp. 34-55, 183-192
	7	MIDTERM EXAM 1		
	9	NO CLASSES – Fall Break		
	14	Vector data analysis I (single map, selection)	9	pp. 355-361
	16	Vector data analysis II (map overlays: spatial and nonspatial) **(grad proposal due)**	9	pp. 361-368
	21	Geocoding (sample exercise)	3	pp. 103-105
	23	Data collection I (digitizing, scanning)		
	28	Data collection II (photogrammetry, GPS, RS)		
	30	Data quality (metadata, error sources)		
November	4	Advanced data models (surface, time, motion)	2	pp. 49-53
	6	MIDTERM EXAM 2		
	11	NO CLASSES – Veteran's Day		
	13	Terrain mapping and analysis I (DEMs)	7	pp. 267-277
	18	Terrain mapping and analysis II (TINs)		
	20	Terrain mapping and analysis III (topo attributes)		
	25	Spatial interpolation (control points, global methods)	7	pp. 278-289
	27	NO CLASSES – Thanksgiving Recess		
December	2	Spatial interpolation II (local methods)		
	4	Remote sensing and GIS I (history, spectrum, A&R)		handout
	9	Remote sensing and GIS II (supervised & unsupervised classification)		
	11	MIDTERM EXAM 3		
December		NO FINAL EXAM		

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LABORATORY SCHEDULE

Date		Topic
August	25	NO LAB
September	1	NO LAB – Labor Day
	8	**Lab organization** – meet briefly to go over lab schedule, report requirements, etc. Introduction to ArcGIS Desktop.
	15	**Lab 1. ArcMap Tutorial**
	22	**Lab 2. A Grid Problem in ArcGIS**
	29	**Lab 3. Using Raster Functions**
October	6	NO LAB
	13	**Lab 4. Buffers, Dissolves, Topological Overlays, and All that Stuff**
	20	**Lab 5. Editing Vector Data I**
	27	**Lab 6. Editing Vector Data II**
November	3	NO LAB
	10	**Lab 7. TIGER**
	17	**Lab 8. DEM – Watersheds**
	24	**Lab 9. TIN – Spatial interpolation**
December	1	Graduate student presentations (everyone attends)
	8	**Lab 10. Remote Sensing**