

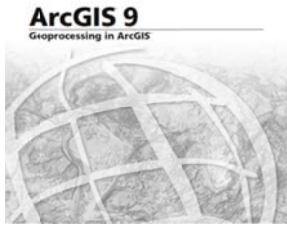
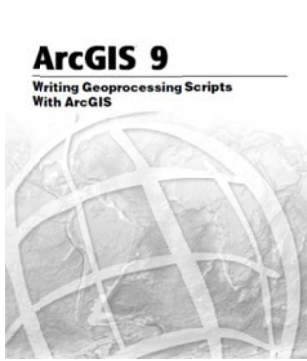


Syllabus for GEOG 432/832

GIS Programming for Advanced Spatial Analysis and Modeling

Fall 2011 | School of Natural Resources, University of Nebraska-Lincoln

Lectures	2:00 – 3:50pm T and Th, 200 Hardin Hall A one-hour lecture followed by a one-hour laboratory practice
Instructor	Dr. Qingfeng (Gene) Guan
Office	324 Hardin Hall
Telephone	472-4002
E-mail	qguan2 {at} unl.edu
Office Hours	By appointment
Teaching Assistant	Jinfu Leng
Office	223 Hardin Hall
E-mail	Jinfu.leng {at} huskers.unl.edu
Office Hours	12:30 – 1:30pm T and Th, 200 Hardin Hall
Prerequisite	GEOG/NRES 412/812 Introduction to Geographic Information Systems, or 18 hours of GIS practice

Optional Textbook		Jill McCoy. 2004. Geoprocessing in ArcGIS. ESRI Press.
Optional Textbook		Corey Tucker. 2004. Writing Geoprocessing Scripts With ArcGIS. ESRI Press.
Course Synopsis	Geographical Information Systems (GIS) are powerful computational tools to solve spatial problems. GIS programming serves the purposes of	

	<p>customizing GIS applications and streamlining spatial analysis by assembling functions provided by the underlying GIS platforms. This course introduces students to Geoprocessing script programming with Python in both commercial GIS environment such as ArcGIS and open-source GIS packages such as OGR and GDAL. Topics include GIS programming environment, programming syntax and styles, interface customization and a variety of GIS routines and functions that can be assembled through programming. Upon successful completions of this course, students will be able to apply GIS programming skills to customize ArcGIS, utilize tools from a set of open-source GIS libraries, and implement application-specific geospatial algorithms, analysis procedures, and models to achieve their respective scientific or practical goals.</p>
<p>Grading</p>	<ul style="list-style-type: none"> • 14 lab assignments, 20 points each, 280 points in total • Lab assignments will be different for undergraduates (400 level) and graduates (800 level) in terms of programming complexity • Each lab dues on the day on which the next lab starts, at noon 12PM CST • 10% penalty will be applied for each day later than the due date
<p>Disability Policy</p>	<p>Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY</p>

Tentative Schedule for Fall 2011

Aug. 23	Python Scripting in ArcGIS	Introduction and Geoprocessing	Lab 1
Aug. 25		Geoprocessing: ArcToolbox, Model Builder, Command Line	
Aug. 30		Fundamentals of Python	Lab 2
Sep. 1		Fundamentals of Python	
Sep. 6		Geoprocessing Programming Model	Lab 3
Sep. 8		Geoprocessing Programming Model	
Sep. 13		Enumeration and Cursor Objects	Lab 4
Sep. 15		Enumeration and Cursor Objects	
Sep. 20		Writing/Reading files, Python Lists and Dictionaries	Lab 5
Sep. 22		Writing/Reading files, Python Lists and Dictionaries	
Sep. 27		No Class (not decided yet)	
Sep. 29		No Class (not decided yet)	
Oct. 4		Working With and Creating Geometries	Lab 6
Oct. 6		Working With and Creating Geometries	
Oct. 11		Using Spatial Analyst and Geostatistical Functions	Lab 7
Oct. 13		Error Checking, Value Tables, and Script Documentation	Lab 8
Oct. 18		Fall Semester Break	
Oct. 20		Error Checking, Value Tables, and Script Documentation	
Oct. 25		Reading and Writing Vector Data with OGR	Lab 9
Oct. 27		Reading and Writing Vector Data with OGR	
Nov. 1	No Class (not decided yet)		
Nov. 3	No Class (not decided yet)		
Nov. 8	Creating Geometries and Handling Projections with OGR	Lab 10	
Nov. 10	Creating Geometries and Handling Projections with OGR		
Nov. 15	Filters and Analysis; Functions and Modules	Lab 11	
Nov. 17	Filters and Analysis; Functions and Modules		
Nov. 22	Reading Raster Data with GDAL	Lab 12	
Nov. 24	Thanksgiving		
Nov. 29	Reading Raster Data with GDAL		
Dec. 1	Map Algebra and Writing Raster Data with GDAL	Lab 13	
Dec. 6	Map Algebra and Writing Raster Data with GDAL		
Dec. 8	Other Tools in GDAL/OGR		
	Open-Source Libraries		