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GEOG 586.01: GIS in Human Geography Laboratory

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Geography 588/586 (Lab.)
Fall, 2002
Paul Wilson, Professor

GIS in HUMAN GEOGRAPHY

Course Outline and Project Assignments

Texts/References:

Bob Booth and Andy Mitchell, Getting Started with ArcGIS, ESRI, Redlands, California, 2001. (Required Text)

Keith Clark, Getting Started with Geographic Information Systems, 2nd Edition, Prentice Hall, Englewood Cliffs, NJ, 1999.

Borden D. Dent, Cartography: Thematic Map Design, 5th Edition, Wm. C. Brown, Dubuque, IA, 1999.

Arthur H. Robinson, et. al., Elements of Cartography, 6th Edition, Wiley, 1995.

Michael Zeiler, Modeling Our World: The ESRI Guide to Geodatabase Design, ESRI Press, 1999.

Course Outline:

Introduction

1. Course Objectives and Scope
A Brief History of GIS and Computer Mapping
GIS Concepts and Definitions
Introduction to ArcGIS 8.2

Project #1–ArcGIS Tutorial

Basic Concepts for Mapping

2. Geocoding
Map Projections and Coordinate Systems
Map Layout

Project #2–Basic Concepts: Introduction to Map Projections, Coordinate Systems, the Public Land Survey System

Census Maps and Census Data

3. Building Census Base Maps: Geographic Data Translations
Obtaining and Manipulating Census Data
Working with Tables–Database Management

Project #2–Choropleth Mapping: Tributary Areas of Major Metropolises in the U. S.

4. The Census Summary Tape Files
The Geography of the Census
Advanced Geocoding

Project #3–Mapping Sub-County Census Areas: American Indian Settlement Patterns On and Off Indian Reservations in Montana

Topology, Address Matching, and Databases

5. Building and Mapping with Address Databases
Point and Lines in Topological Data Structures
Address Matching

Project #4–Address Matching for Mid-Sized Towns in Montana

Building and Managing Geographic Databases: The Problem of Base Maps

6. Local Base Maps for Vector GIS
Availability of Base Maps
Creating Base Map Layers
Data Translations
More Map Projection Problems for ArcGIS
GCDB: the Geographical Coordinate Database
Elements of Cadastral Mapping
The Use of Cadastral Mapping in Urban Land Use Planning.

Project #5–County Plat Maps: Missoula County vs. Butte/Silver Bow County, Montana

Analytical Procedures

6. Relating point databases to polygons
Building and Loading Avenue Scripts

Nearest Neighbor Analysis
Point-in-Polygon Analysis

**Project #6–Point-in-Polygon Analysis, Tornado Mobile Research Stations,
Kansas and Oklahoma**

7. Building a Base Map from Scratch–Digitizing
Overlay Analysis
Polygon Disaggregation
Buffers and Zones

Project #7–Developable Sites Near Anchorage, Alaska

Software:

ArcGIS 8.2	EXCEL
SPSS	Cartalinx
Import/Export	AGFshape

Grading:

Grades in this class will be based entirely on the projects. Each project will include either a map or a series of maps. Each shall also include a title page and text comprised of description, discussion, analysis, and conclusions. Projects are to be bound in a theme cover. All maps and figures are to conform to thesis format as concerns binding edges, margins, and so forth. Some projects may entail class discussions and presentations. If so, these elements will comprise part of the grade.

There will be no examinations, but the Final Exam Period will be used as a class period. Graduate Students in Geography must register for a traditional grade. Simultaneous registration in Geog 586, Cartography/GIS Laboratory is required of all students.