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# GEOG 588.01: GIS in Human Geography

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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, 2<sup>nd</sup> Edition, Prentice Hall, Englewood Cliffs, NJ, 1999.

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

Arthur H. Robinson, et. al., Elements of Cartography, 6<sup>th</sup> 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.