PPAI 2600
Social Science Data Technologies

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Office Hours: Tuesday & Thursday 3:00-4:00pm or by Appointment
Class: Tuesday & Thursday 1:00 pm – 2:20 pm, Room 265 Watson (CIT)

Spring 2014

Course Rationale: This course will concentrate on the applied use of data and computer software in a variety of social science substantive areas. Its goals are to teach students how to use common software packages and access policy-relevant data from a wide range of governmental and private sources. By the end of the semester, students should feel comfortable using a variety of programs with raw data, and understand how they can be employed to analyze public policy issues.

Course Format: We will devote 20-30 minutes at the beginning of each class to the demonstration and discussion of new procedures; in-class (hands-on) lab exercises comprise the remainder of the class. Most weeks there will be a Problem Set designed around the current topic which is due the following Monday. It is essential that students participate in each session's discussion and hand in assignments at the scheduled time.

Course Assignments: The assignments for this course will consist of problem sets and a practical exam.

> **Problem Sets:** Problem sets are weekly assignments which will involve the use of software, data and concepts. Students need to keep up with these exercises and turn them in at the scheduled time.

> **Practical Exam:** The practical exam is designed to allow each of you to demonstrate your basic familiarity with the major themes and analytic techniques in this course. **May 12, 2:00 PM, room 265 Watson (CIT)**

Data Files and Electronic Readings: The data files used for assignments and in class exercises are located on CANVAS and are available for download along with all PDF files assigned as readings.

Grading: Course grades will be based on 8 -10 problem sets (75%), Practical Exam (25%) and class participation.

Course Schedule:

January 23:   What is Social Science Data Technologies?

Course introduction, data sources, outline of the course, assignments, DataFerrett and SPSS Demo

January 28:

> **DataWeb / DataFerrett**
> http://dataferrett.census.gov/   http://thedataweb.rm.census.gov/TheDataWeb/launchDFA.html
> DataFerrett Users Guide (PDF)
> (please review: "How do I use an SPSS setup file to import ASCII data.pdf")

SPSS I
>**Working with a Syntax File**
>**Weight Cases**

Problem Set #1

January 30:

SPSS I
>**Recode**
>**Select Cases**
>**Frequencies & Crosstabs**

Data File Structures
>File Structure

>>Codebooks   please look over "Summary File 3.pdf" , "cpsmar05.doc", "cpsmar06.txt" and "cpdmsr09.txt."

ICPSR (Inter-University Consortium For Political and Social Research)
>A unit within the Institute for Social Research at the University of Michigan, URL   http://www.icpsr.umich.edu/
(In ICPSR Data Download please review "Data Access & Analysis" and "Data Use Tutorial")

February 4:
SPSS II   "SPSS Statistics Brief User's Guide.pdf" (Data Transformations)
>Creating New Variables
>Recoding
>Boolean Constructs
>Frequencies
>Crosstabs
>Means
>Correlations
>>"SPSS Statistics Brief Guide.pdf"
>>"SPSS Advanced Statistics 20.0.pdf"

Problem Set #2

February 6:

SPSS III
>Data File Types "SPSS Statistics Brief User's Guide.pdf" (Ch. 2 Reading Data)
>Importing Data
>Managing Data
>>"SPSS Statistics Brief User's Guide.pdf"   (Ch. 4 Working with Multiple Data Sources)

February 11:
Data Management through Microsoft Access
Getting Started with Access 2010.pdf
http://office.microsoft.com/en-us/access-help/access-2010-database-tasks-HA101829991.aspx?CTT=5&origin=HA010341722
Flat File Database vs. Relational Database
Introduction to tables.pdf
Relationships.pdf
Importing vs. Linking Data
Import or Link.pdf

Problem Set #3

February 13:

Data Management through Microsoft Access
Exporting Data
Export Data.pdf
Queries
Introduction to queries.pdf
Computing New Variables
See Query in Help
Create a simple report.pdf
Working with Macros and Expressions.pdf

February 20:

Microsoft Access as an Analytic Tool
Frequencies, Means, Crosstabs and Correlations
Formulas and Functions in Help
Review FARS Codebook
ftp://ftp.nhtsa.dot.gov/FARS/FARS-DOC/USERGUIDE-2010.pdf

February 25:
Excel Spreadsheets
File Limitations
Import and Export Data
Relative vs. Absolute Reference
"Getting Started with Excel.pdf"   "Addressing.xls"

Filtering Data
Filtering Tips.pdf
Advance Filter Notes.pdf
Formulas
Excel Formulas.pdf
Frequencies, Means, Crosstabs and Correlations
Excel Pivot Table.pdf

Problem Set #4

February 27:

Excel Spreadsheets

> **Population Pyramid**
> > Population Pyramid.doc
> > Pop Pyramid1.xls

March 4:

> **American Community Survey**
> > Summary File Retrieval Tool.xls
> > **SFRetrievalToolUsersGuide.pdf**

> **Problem Set #5**

March 6:
> **Excel Spreadsheets**

> **Aggregating Data in Excel from Access**

March 11:

> **Accessing Census Data I**
> > Census Data Series
> > > Major Census Datasets.doc
> > > Public Use Micro Sample Files (PUMS), (PDF)
> > > http://www.census.gov/main/www/pums.html

> > Current Population Series
> > > Current Population Surveys, Documentation and Structures, (PDF)
> > > http://thedataweb.rm.census.gov/TheDataWeb/launchDFA.html
> **Analyzing Census Data II**
> > Hierarchical Data Structures

 March 13:
> **Analyzing Census Data III**
> **2000 and 2010 Census Summary Files**
> > **Access**

March 18:

Getting Started with ArcGIS Desktop
Reference Readings: Getting Started with ArcGIS, section 1;
Getting Started with ArcGIS desktop

GIS Lab Tutorial: Module 1 (Using GIS to solve problems)

> **Problem Set #6**

March 20:

ArcCatalog
> Using ArcCatalog.pdf
>> ArcMap
>>> Using ArcMap.pdf

Demonstration Topics: explore a GIS map, preview geographic data and metadata, add data to a map, data formats, point, line, and polygon features, describing spatial relationships and using GIS to solve problems.

April 1:

Joining Data in ArcGIS, working with tables
Reference Readings: Using ArcMap, chap. 10 "Working with tables, and Joining Summary File Census Data to ArcGIS Geographic Themes-SF3 as an Example with Office 2007.pdf, Jack D. Combs.

In-Class Exercises: join new data tables to geographic coverages

> **Problem Set #7**

April 3:

GIS Lab Tutorial:
Demonstration Topics: geographic themes, data tables, joining data to geography, census data resources, and census geography

In-Class Exercises: create new variables in a joined data table.

April 8:

Mapping change
Change in location, change in location and magnitude, percent change in value.

> **Problem Set #8**

April 10:

> Continue with Mapping Change

April 15:

Creating new shape files
GIS Lab Tutorial: Creating new shape files,

Demonstration Topics: Creating new shape files,

In-Class Exercises: Using dissolve and merge to create new shape files from existing files

Creating your Own Data, Geocoding
                    Geocoding in ArcGIS Tutorial.pdf

   Problem Set #9

April 17:

Reference Reading: Learning ArcGIS 9.2, Module 5, Geocoding in ArcGIS, chap 1, 3-4.
M5 Creating and Editing Data.pdf

Demonstration Topics: Editing features shapes and attributes, creating new features and attributes, calculating attributes, Geocoding address files and lists.

In-Class Exercises: Geocoding practices and expectations, creating new data, editing existing data and coverage
s

Creating your Own Data, x,y Data

   Work with Providence Parcel Data

April 22:

M3 Referencing Data to Real Locations.pdf
Reference Reading: Learning ArcGIS, Module 3; Understanding Map Projections, Chap. 1-3.

Demonstration Topics: Geographic coordinate systems, understanding datum's, map and display units, map projections,

In-Class Exercises: Module 3; view and modify coordinate systems information.

   Problem Set #10

April 24:

Geo-referencing an Image
      Working with Raster Data

April 29:

Measuring geographic distribution
Calculating centers, weighted centers, standard distance, standard deviational ellipses, and linear directional mean.

May 1:

   Index of Dissimilarity

Index of Dissimilarity.doc
Providence City.doc
Index Formula.xls

Data Encryption and Decryption
What is cryptography and how does it word
Conventional vs. Public Key
Making and distributing public keys
Encrypt and decrypt files
"Intro to Crypto.pdf"
"PGPWin Users Guide.pdf"

May 6:
Semester Review

May 12: 2:00 pm (CIT 265)
Practical Exam