

ES341 Fundamentals of GIS - Final Study Guide

Study Tips

- Read all chapters in book, study figures and tables, compare chapters to notes
- Use study guide as a check list for knowing key terms, key concepts, key skills
- Go back through the class / lab exercises, make sure you can do the math work
- Go back through the key skills emphasized in the tutorials, make sure you know the software skills
- I would study for a minimum of 10-12 hours if I wanted to do well on this exam.
- create a sheet of key ArcMap commands - bring to exam; it will make your job easier.
- bring a calculator to the exam.

Key Words and Skills Since Midterm

Map Projections – Part 2

x,y coordinates
map projection
georeference system
map registration
map resolution
metadata
datum
North American Datum
NAD1927
NAD1983
Geographic Coordinate System
(GCS – WGS1984 lat. long.)
UTM Zone 10N NAD1927
UTM Zone 11N NAD1927
Oregon State Plane North
Oregon State Plane South
Oregon Statewide Lambert
Arc Toolbox
 Define projections tool
 Project tool
*.prj projection file

Geoprocessing (Price Ch. 8)

Geoprocessing defined
geoprocessing tools
geoprocessing of shape files
merge
clip
dissolve
erase
intersect
union
append

buffer
clipping functions
merging shape files
polygon editing
splitting polygons
merging polygons
polygon islands
Arc Toolbox

Data Editing (Price Ch. 11-12)

Editor Toolbar
Point-snapping
Data editing
Remove dangle nodes
Edge matching
creating shape files
heads-up digitizing
convert to shape file
polygon tool
split polygon tool
complete polygon tool
shape editing
editing shapes
vertex
node
shape split
shape merge
split tool
digitizing polygons
digitizing polylines
vertex editing
adding points to shapes
adding polygons to shapes
adding lines to shapes
saving edits to shapes
rotating features
deleting features

create features

Attribute Editing

attribute database
*.dbf file
table editing
add field
table link
table join
attribute data calculation
field calculator

Spatial Analyst / Raster Analysis

Spatial analyst extension
Discrete point data
Grid format
Grid attributes
raster data
grid themes
georeferencing rasters
world file
rectification
Control Points
legend editor
spatial analyst extension
DEM
elevation grid
inquire tool
cell value
Grid Data Source
color ramp
hillshade
theme - convert to grid
surface-derive slope
surface - compute hillshade
surface - create contours

file-manage data sources
theme-convert to shape file
query builder for grids
classify legend
Analysis- Calculate density
from point file
grid interpolation
creat contours from grid theme

USGS DEM
raster grid to a vector polygon
vector polygon to a raster grid
use the measure tool

Terrain Mapping

DEM

DTM

surface - create contour map
surface - create hillshade map
surface - create slope map
surface-create aspect map

Map Algebra

grid map algebra
matrix algebra
map calculator - evaluate
algebraic transformation of grid

Data Display

legend editor
map classification
polygon labels
text labels
label tools
labeling map feature from dbase

KEY MIDTERM CONCEPTS THAT WILL BE REVISITED

map projection
georeference system
vector-raster representation
using the query tool
legend editor
printing layouts
metadata
working with polygons, lines
adding image data sources
UTM
state plane
Custom Lamber
projection utility

Key Software / Analytical Skills

Can you work with the following tools?

spatial analyst, projection utilities, geoprocessing tools, editor toolbar?

do you know the basic functions of these tools, the types of data they are used with, the types of analytical procedures that can be performed with them?

Can you create a nice looking map in layout and print it out?

Can you define, project and reproject data?

Can you incorporate raster and vector data in a GIS exercise?

Can you perform a slope analysis using spatial analyst?

Can you create a hill-shading model using spatial analyst?

Can you create vector and raster-based queries to identify select areas on a map?

Can you add data to a table using the table editor?

Can you use the geoprocessing to clip, dissolve, merge data?

Can you find and download gis data from web sites, convert and decompress the data?

Can you use the editing tools to create and edit polygons?

Can you employ heads-up digitizing to create your own shape files? Can you use image analyst to mosaic air photos?

Can you use a photo / image base and create a shape file via digitizing?

Do you know what the following files / data types are: *.e00, *.shp, *.grd, Mr. Sid, *.tif, *.jpg, *.tfw, *.sdw, *.zip, *.tar.z, DOQ, DRG, DEM

Can you download and import a USGS DEM into an arcview / spatial analyst grid format?

What's the difference between an *.dem and *.grd file format?

Can you manage *.zip and *.tar.gz files?

Do you understand basic concepts of map algebra and what types of data it's used on?

Anticipate: 2-3 essay questions focusing on broad summaries of GIS, the types of applications it may be used for, the components of ArcMap specifically.

GOAL OF FINAL EXAM: To test your ability to use ArcMap and ArcToolbox as a tool to ask questions of spatial data.