

# G492 GIS Applications Midterm 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 1 page sheet of key ArcView commands - bring to exam
- bring a calculator to the exam.

## Key Words

### Intro to GIS

GIS defined  
(list key components)  
map features  
points, lines, polygons  
layers, themes  
    coverage  
    shape file  
attributes  
GPS  
geodesy  
spatial coordinate system  
lat / long  
UTM  
state plane  
map projection  
discrete spatial features  
continuous spatial features  
feature attributes  
vector data model  
topological vector model  
non-topological vector model  
raster data model  
attribute data  
database  
digitization  
database tables  
fields  
records  
data query  
spatial interpolation  
spatial query

symbol maps  
line maps  
area maps  
volume maps

### Intro to Topo Maps Notes

equivalence  
conformality  
cylindrical projection  
conical projection  
georeference  
lat - long  
meridians  
parallels  
equator  
prime meridian  
north pole  
south pole  
great circles  
small circles  
degrees-minutes-seconds  
magnetic north  
true north  
fractional scale  
small scale  
large scale  
azimuth  
compass bearing  
aspect  
relief

### ArcView Glossary Terms

active theme

attribute  
charts  
layout  
view  
database  
extensions  
projection utility  
spatial analyst  
grid  
image  
map feature  
image data  
map extent  
zoom extent  
zoom active  
view properties  
map units  
Project  
query builder  
shape file  
table  
table of contents  
active theme  
theme  
pan

### Map Projections

data points  
x,y coordinates  
map projection  
map layers  
georeference system  
map registration  
map resolution

conformal projection  
equivalent projection  
polar projection  
equatorial projection  
cylindrical projection  
conical projection  
tangent projection  
standard parallel  
standard meridian  
central parallel and meridian  
false easting , false northing  
metadata  
transmercator  
lambert  
spheroid  
datum

### Vector Data models

points  
lines  
arcs  
vertex  
node  
line segments  
polyline  
line  
polygon  
contiguous polygon  
donut  
island  
attributes  
topology  
left/right poly topology  
topological errors  
dangling nodes  
undershoots  
overshoots  
leaky polygons  
snapped nodes  
metadata  
digitizing  
RMS error

### Raster Data Structure

grid data  
raster data  
grid cell

DEM  
orthophoto  
columns-rows / x-y  
vector-raster representation  
cell values  
integer  
floating point  
world file  
remote sensing  
satellite imagery  
em spectrum  
spectral bands  
multispectral image  
wavelength  
color bands  
tiff, gif, jpeg, MrSID  
vectorization  
rasterization

### GTKAV Ch 7 tutorial

Opening projects  
opening themes  
opening charts  
printing layouts

### GTKAV Ch 8 tutorial

feature data sources  
image data sources  
adding themes to view  
working table of contents  
activating themes  
turning themes on / off  
working with polygons, lines  
adding image data sources

### GTKAV Ch 9 tutorial

legend editor  
modifying legends  
classified legends

### GTKAV Ch 10 tutorial

adding map symbols  
adding point themes  
modifying legend colors  
modifying poly fills  
applying labels

working with fonts in view  
working with fonts in layout

### GTAV Ch 11 tutorial

set view properties  
set view distance  
measuring distance  
measuring poly areas  
setting map projections from lat  
long

### GTKAV Ch 12

setting view scale  
setting layout scale  
zooming in / out in view

### GTKAV Ch 13

using the query tool  
using tables to query  
relating tables to map features  
asking logical queries

### GTKAV Ch 14

selecting records in tables

### GTKAV Ch 15-16

table displays  
editing tables  
adding fields to tables  
entering data to tables  
joining-linking tables  
identifying key fields

## Lab Skills - In-Class Exercises

Can you work with paper maps?

What about topographic maps (contour intervals, declination, scale)

fractional scale

graphical scale

can you convert from map units to ground distance units?

Can you calculate grid resolution from column-row and easting-northing data?

What about the structure of raster models vs. vector models.

What does a coded polygon look like in the raster model vs. the vector model?

Can you relate real world spatial features to GIS map features (points, lines, polygons)?

Can you locate positions of points of longitude and latitude? UTM? State Plane?

Can you convert from degrees to minutes to seconds? How about to decimal degrees from minutes and seconds?

Can you create polygon topology from a set of map points?

Can you calculate RMS error?

## ArcView Software Skills

can you open a view and add themes (vector and raster?)

can you create a layout and print?

can you set the map units in view-properties, and use the measure tool?

can you open a table and view the database?

can you project themes from one projection to another?

can you save a project?

do you know the difference between a project and view and theme?

can you work with feature data? image data? grid data?

can you zoom in and out of a view?

can you use the query tool?

can you change the legend colors and symbols?

can you determine the coordinates of points on a theme?

can you use metadata with your map themes?

can you run the arc projection utility?

can you activate the spatial analyst extension?

can you import a USGS DEM?

Can you convert a vector polygon to a raster grid?

can you convert a raster grid to a vector polygon?