

WTCS Repository

10-806-149 Introduction to G.I.S.

Course Outcome Summary

Course Information

Description Geographic information systems (GIS) provide the ability to automate map production and to integrate earth imagery with other data to produce geo-spatial information. This technology has applications in many fields of science, including environmental assessment, analysis of natural hazards, location analysis, resource management, land use planning, and global change. This course introduces the learner to GIS software, cartographic principles, and data synthesis. Using ArcView 9.0, students learn the fundamentals of ArcView and geo-spatial information science while creating multiple map projects. Learners acquire, sort, relate, and manipulate scalable attribute data for the purposes of measurement retrieval, analysis, synthesis, description, and display of natural and physical features, as well as cultural phenomena, to promote a better understanding of our physical and scalar environment. Using student-acquired and pre-existing data sets, learners focus on how decisions are made regarding land use planning, resource allocation, navigation, shifting populations and more to gain insight into how the earth works and how it is evolving, connecting, and changing.

Total Credits 3.00

Pre/Corequisites

Prerequisite Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

Course Competencies

1. Define GIS

Assessment Strategies

1.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 1.1. learner differentiates between geographical spatial analysis and computer-driven GIS tools
- 1.2. learner lists the advantages and disadvantages of paper and digital maps
- 1.3. learner graphs sample digital data

2. Compare and contrast electronic atlases with GIS

Assessment Strategies

2.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 2.1. learner explains how electronic atlases only present information, whereas GIS allows for modification, correction, and further analysis of information

3. Investigate the significance of spatial information

Assessment Strategies

- 3.1. in a written exam
- 3.2. given sample data

Criteria

Performance will be satisfactory when:

- 3.1. learner lists the advantages and disadvantages of paper and digital maps
- 3.2. learner graphs sample digital data

4. Describe various types of mapping systems

Assessment Strategies

- 4.1. given sample data
- 4.2. given a sample map
- 4.3. in a written exam

Criteria

Performance will be satisfactory when:

- 4.1. learner describes two different coordinate systems
- 4.2. learner locates positions on a map using latitudes and longitude
- 4.3. learner locates positions on a map using UTM system
- 4.4. learner lists basic map elements

5. Describe various methods of projections

Assessment Strategies

- 5.1. using GIS software
- 5.2. in a written exam

Criteria

Performance will be satisfactory when:

- 5.1. learner describes equal area projections
- 5.2. learner describes conformal projections
- 5.3. learner selects the best projection for expressing data

6. Identify the types of GIS

Assessment Strategies

- 6.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 6.1. learner lists electronic atlases, thematic maps, and street-based mapping systems in GIS and differentiates between scale, features and locations

7. Distinguish between the five essential characteristics of a modern GIS

Assessment Strategies

- 7.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 7.1. learner lists the five essential characteristics of GIS: spatial data, image data, tabular data, coordinate data, and data dictionary

8. Differentiate between Raster and Vector data

Assessment Strategies

8.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 8.1. learner defines raster data as square cells with problems at edges and scale
- 8.2. learner defines vector data as coordinate data

9. Classify six objects that can be displayed on maps

Assessment Strategies

9.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 9.1. learner differentiates among points, lines, polygons, images, features, and tabular data

10. Characterize the three basic shapes used in GIS to represent objects

Assessment Strategies

10.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 10.1. learner distinguishes between points, lines, and polygons, and relates them to vector and/or raster data

11. Define features, spatial relationships, scale, attribute, and theme

Assessment Strategies

11.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 11.1. learner relates attributes to features
- 11.2. learner relates map scale to real-world scale
- 11.3. learner relates themes to features

12. Differentiate between file types used in GIS

Assessment Strategies

12.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 12.1. learner compiles a list of GIS file types

13. Investigate the significance of spatial information

Assessment Strategies

- 13.1. in a written exam
- 13.2. producing a map

Criteria

Performance will be satisfactory when:

- 13.1. learner graphs sample digital data
- 13.2. learner produces a map
- 13.3. learner lists advantages and disadvantages of paper and digital maps

14. Differentiate between ArcView, ArcMap, ArcCatalog, and ArcToolbox software packages

Assessment Strategies

14.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 14.1. learner recognizes that ArcMap, ArcCatalog, and ArcToolbox are applications within the ArcGIS software package
- 14.2. learner compares and contrasts the different functions of ArcMap, ArcCatalog, and ArcToolbox

15. Evaluate the properties of ArcToolbox

Assessment Strategies

15.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 15.1. learner changes map projections
- 15.2. learner converts spatial data types
- 15.3. learner uses ArcToolbox wizards

16. Assess how ArcView relates to GIS

Assessment Strategies

16.1. in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 16.1. learner assesses how the ArcView layers, features, feature attributes, and surfaces comprise a GIS

17. Examine how to navigate in ArcMap and display features

Assessment Strategies

17.1. using ArcMap to create a map

Criteria

Performance will be satisfactory when:

- 17.1. learner explains and assesses how data is displayed in ArcMap
- 17.2. learner differentiates between Map view and Table of Contents
- 17.3. learner activates and deactivates layers
- 17.4. learner uses context menus
- 17.5. learner uses properties dialogue box to assess data
- 17.6. learner uses Zoom-In tool
- 17.7. learner uses Zoom-to-Full-Extent tool
- 17.8. learner uses Zoom-to-Previous-Extent tool
- 17.9. learner uses Select Element tool
- 17.10. learner uses Map Tips tool
- 17.11. learner uses Identify tool

18. Examine how to get information about map features

Assessment Strategies

18.1. using ArcMap to create a printable map

Criteria

Performance will be satisfactory when:

- 18.1. learner uses Pan tool
- 18.2. learner uses Tools Toolbar
- 18.3. learner uses Zoom-to-Layer tool
- 18.4. learner uses Magnifier tool

- 18.5. learner creates Bookmarks
- 18.6. learner edits feature data set
- 18.7. learner uses Measure tool

19. Discover how to get information about feature attributes

Assessment Strategies

- 19.1. using ArcMap to create a printable map

Criteria

Performance will be satisfactory when:

- 19.1. learner opens, examines, and edits an Attribute Table
- 19.2. learner sorts fields in attribute table
- 19.3. learner performs statistical analysis of attribute field data

20. Explore how to browse map data

Assessment Strategies

- 20.1. using ArcCatalog to create a printable map

Criteria

Performance will be satisfactory when:

- 20.1. learner opens ArcCatalog application
- 20.2. learner uses Options Tools menu to examine the data types and data listings in ArcCatalog
- 20.3. learner uses Hide File and Unhide File Tool
- 20.4. learner uses Standard toolbar to Connect to Folders
- 20.5. learner uses and edits Catalog Tree
- 20.6. learner differentiates between shapefiles, geodatabase files, layer files, and feature classes
- 20.7. learner displays thumbnails of data sets
- 20.8. learner differentiates between data file icons
- 20.9. learner creates thumbnail icons in map view
- 20.10. learner uses Preview Tab
- 20.11. learner uses Metadata Tab to view information
- 20.12. learner uses Geography Toolbar to highlight features
- 20.13. learner uses Identify Tool
- 20.14. learner uses Preview drop-down lists to access feature data set

21. Demonstrate how to search for data in ArcCatalog

Assessment Strategies

- 21.1. using ArcCatalog, create a printable map

Criteria

Performance will be satisfactory when:

- 21.1. learner uses Search button
- 21.2. learner searches by file name or type
- 21.3. learner searches by geographic location
- 21.4. learner searches by file data
- 21.5. learner searches by Keywords
- 21.6. learner uses Browse button
- 21.7. learner uses Find Data button
- 21.8. learner uses Go-To-Target button
- 21.9. learner acquires raster data set
- 21.10. learner uses Catalog Tree and Preview Tab

22. Explain how to add data to ArcMap

Assessment Strategies

- 22.1. using ArcMap, create a printable map

Criteria

Performance will be satisfactory when:

- 22.1. learner uses the launch ArcMap button
- 22.2. learner renames layer file
- 22.3. learner assesses the difference between a virtual page and data frames
- 22.4. learner uses Data View button
- 22.5. learner changes color of layer file
- 22.6. learner uses color palette
- 22.7. learner creates New Data Frame

23. Facilitate how to symbolize features and rasters

Assessment Strategies

- 23.1. using ArcView, create a four-part map project

Criteria

Performance will be satisfactory when:

- 23.1. learner uses Symbol Selector and edits symbols
- 23.2. learner uses Label Features dialog box to edit symbols
- 23.3. learner changes background colors and symbol colors

24. Assess how to symbolize features by categorical attributes

Assessment Strategies

- 24.1. using ArcView, create a new map 1 of a four-part project

Criteria

Performance will be satisfactory when:

- 24.1. learner uses and edits Symbology features to produce a graduated color scheme for a categorical attribute
- 24.2. learner uses Color Scheme drop down list
- 24.3. learner edits new color scheme
- 24.4. learner adds data to existing map
- 24.5. learner creates and edits new layer file
- 24.6. learner creates new map with features symbolized by categorical attributes
- 24.7. learner edits attribute tables for new layer
- 24.8. learner creates new map 1 of four-part project

25. Assess how to use styles and create layer files

Assessment Strategies

- 25.1. using ArcView, create a new map 2 of a four-part project

Criteria

Performance will be satisfactory when:

- 25.1. learner adds data to existing file and changes symbols on a point layer
- 25.2. learner uses Symbol Selector for Point Symbols
- 25.3. learner uses Display More Symbols
- 25.4. learner assesses available symbology types
- 25.5. learner changes sizes and colors of symbols
- 25.6. learner saves new symbology as a layer file

26. Clarify how to symbolize rasters

Assessment Strategies

- 26.1. using ArcView, creates new map 3 of four-part project

Criteria

Performance will be satisfactory when:

- 26.1. learner clarifies raster data criteria as being a matrix of same-sized cells with value attributes assigned to each cell
- 26.2. learner builds pyramids
- 26.3. learner renames raster data set
- 26.4. learner drags and drops layer files
- 26.5. learner changes colors of raster layer
- 26.6. learner selects values for color ramp
- 26.7. learner edits layer properties
- 26.8. learner adds and edits vector data to layer file
- 26.9. learner creates Bookmark
- 26.10. learner creates new map

27. Classify features and rasters by standard methods

Assessment Strategies

- 27.1. using ArcView, create a new map 4 of four-part map project

Criteria

Performance will be satisfactory when:

- 27.1. learner differentiates between graduated color, dot density, graduated symbol, and proportional symbol map types
- 27.2. learner differentiates between quantile, natural breaks, equal interval, defined interval, standard deviation, and manual methods for classifying data
- 27.3. learner sorts attribute fields
- 27.4. learner creates graduated color symbology map by classifying data set using natural breaks method
- 27.5. learner creates histogram of data
- 27.6. learner creates graduated color symbology map by classifying data using equal interval method

28. Classify features manually

Assessment Strategies

- 28.1. using ArcView, create new map 5 for four-part map project

Criteria

Performance will be satisfactory when:

- 28.1. learner classifies data breaks manually
- 28.2. learner creates histogram of new class
- 28.3. learner edits data set
- 28.4. learner formats labels

29. Assess mapping density

Assessment Strategies

- 29.1. using ArcView, create new maps 5 and 6 to a four-part map project

Criteria

Performance will be satisfactory when:

- 29.1. learner normalizes data set
- 29.2. learner creates new dot density map of populations
- 29.3. learner creates new graduated color map of population densities

30. Explore how to use graduated and chart symbols

Assessment Strategies

- 30.1. using ArcView, create new maps 7, 8 and 9 of four-part map project

Criteria

Performance will be satisfactory when:

- 30.1. learner assesses how to create graduated symbol maps
- 30.2. learner selects appropriate symbol for graduated symbol map
- 30.3. learner changes symbol sizes
- 30.4. learner replaces symbol values with descriptions
- 30.5. learner creates and edits new layer file symbolizing energy resources
- 30.6. learner creates pie chart symbols
- 30.7. learner creates new pie chart symbol map

31. Examine how to label features using dynamic labels

Assessment Strategies

- 31.1. using ArcView, create a new printable map using dynamic labeling

Criteria

Performance will be satisfactory when:

- 31.1. learner differentiates between dynamic labels and interactive labels
- 31.2. learner edits labels in a layer file by changing colors, fonts, font sizes, and label placement on map
- 31.3. learner creates new dynamic labels in a layer file

32. Appraise the rules for setting and placing labels

Assessment Strategies

- 32.1. using ArcView, create a new printable map

Criteria

Performance will be satisfactory when:

- 32.1. learner assesses guidelines for setting rules for label placement
- 32.2. learner uses Label Placement Options and Placement Tab to set guidelines
- 32.3. learner changes location of labels on a layer file
- 32.4. learner changes label priority list to establish new priorities for label placements
- 32.5. learner changes label placement to follow way lines such as rivers
- 32.6. learner changes scale range to allow labels to show at appropriate scales

33. Ascertain how to use interactive labels and creating annotation

Assessment Strategies

- 33.1. using ArcView, create a new map with annotated interactive labels

Criteria

Performance will be satisfactory when:

- 33.1. learner uses interactive labeling to place labels in preferred places on maps
- 33.2. learner uses annotation to allow for movement and symbolization individually
- 33.3. learner saves annotation as a feature class in a geodatabase
- 33.4. learner edits and creates new labels in the Labeling Options Dialog box
- 33.5. learner uses the Select Elements tool
- 33.6. learner creates new map with annotated interactive labels

34. Examine how to query, select, find, identify, and hyperlink features

Assessment Strategies

- 34.1. using ArcView, create a new printable map

Criteria

Performance will be satisfactory when:

- 34.1. learner uses Identify tool
- 34.2. learner uses Set Selectable Layers button
- 34.3. learner uses Select Features tool
- 34.4. learner uses Interactive Selection tool

- 34.5. learner uses Remove From Current Selection tool
- 34.6. learner highlights records
- 34.7. learner finds and uses Hyperlink Tool to get images
- 34.8. learner creates Hyperlinks
- 34.9. learner finds features by using matching addresses

35. Ascertain how to select features by attribute

Assessment Strategies

- 35.1. using ArcView, create new printable map

Criteria

Performance will be satisfactory when:

- 35.1. learner builds a query to select features that have values and attributes, and specific relationships between them
- 35.2. learner uses SQL to build query
- 35.3. learner uses Select By Attributes box
- 35.4. learner creates map with new selected attributes based on query parameters

36. Create a report

Assessment Strategies

- 36.1. using ArcView, create a report printout

Criteria

Performance will be satisfactory when:

- 36.1. learner uses Create Report and Properties tool
- 36.2. learner creates and edits report
- 36.3. learner preview report with Title
- 36.4. learner Prints report

37. Join tables

Assessment Strategies

- 37.1. making correct responses to test questions and using ArcView, create new printable map

Criteria

Performance will be satisfactory when:

- 37.1. learner differentiates among one-to-one, one-to-many, and many-to-one relationships
- 37.2. learner joins tables using the Join Table button
- 37.3. learner creates new layer file and prints new map

38. Relate tables

Assessment Strategies

- 38.1. using ArcView, create a new printable map

Criteria

Performance will be satisfactory when:

- 38.1. learner relates tables in a one-to-many relationship
- 38.2. learner creates new layer file and prints new map
- 38.3. learner uses Remove Join and Remove Relate to undo his joins and relates

39. Assess how to select features by location using location queries

Assessment Strategies

- 39.1. using ArcMap, create a new printable map

Criteria

Performance will be satisfactory when:

- 39.1. learner defines distance, containment, intersection, and adjacency as spatial relationships
- 39.2. learner selects features using the Select By Location tab

- 39.3. learner builds location query
- 39.4. learner applies buffers
- 39.5. learner measures and edits distance

40. Combine attribute and location queries

Assessment Strategies

- 40.1. using ArcMap, creates new printable map

Criteria

Performance will be satisfactory when:

- 40.1. learner selects locations by attributes
- 40.2. learner creates new query by attributes and location criteria
- 40.3. learner applies new query to create new layer file
- 40.4. learner joins attributes by location

41. Prepare data for analysis by dissolving features

Assessment Strategies

- 41.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 41.1. learner simplifies data by dissolving features
- 41.2. learner builds new data set by altering attributes
- 41.3. learner creates and edits new layer files

42. Create graphs

Assessment Strategies

- 42.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 42.1. learner compares and contrasts graph types: pie, scatter, column, and area graphs
- 42.2. learner uses Graph Wizard
- 42.3. learner creates and edits new chart
- 42.4. learner compares old and new charts
- 42.5. learner creates new chart map

43. Simplify data by clipping layers

Assessment Strategies

- 43.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 43.1. learner uses Set Selectable Areas
- 43.2. learner selects features to be clipped
- 43.3. learner creates new layer and clips data
- 43.4. learner uses Geoprocessing Wizard

44. Export data to other files

Assessment Strategies

- 44.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 44.1. learner creates new data set and new layer by exporting data
- 44.2. learner uses Export Data tab
- 44.3. learner creates and edits new layer file

45. Analyze spatial data by buffering features

Assessment Strategies

- 45.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 45.1. learner assesses the difference between buffers and map overlays
- 45.2. learner uses the Buffer Wizard
- 45.3. learner creates 3 buffers and new layer files
- 45.4. learner edits attributes of buffer layers

46. Analyze data by overlay method

Assessment Strategies

- 46.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 46.1. learner differentiates between union and intersected overlays
- 46.2. learner uses Geoprocessing Wizard to create new union overlays
- 46.3. learner creates and edits attributes of new overlay layer file

47. Analyze data by calculating attribute values

Assessment Strategies

- 47.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 47.1. learner differentiates between numeric and text attribute values
- 47.2. learner builds query using Query Builder
- 47.3. learner writes and edits expression using SQL
- 47.4. learner creates new layer file
- 47.5. learner uses statistical analysis to analyze frequency distributions

48. Project data in ArcMap for display

Assessment Strategies

- 48.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 48.1. learner defines how ArcMap projects on-the-fly
- 48.2. learner uses ArcToolbox Projection Wizard
- 48.3. learner edits Metadata file
- 48.4. learner creates new layer
- 48.5. learner creates bookmark for new layer

49. Define a projection

Assessment Strategies

- 49.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 49.1. learner uses ArcToolbox to use Define Projection Wizard
- 49.2. learner selects and defines new projection
- 49.3. learner uses Spatial Reference Dialog box
- 49.4. learner creates new layer file
- 49.5. learner

50. Create a personal geodatabase

Assessment Strategies

50.1. using ArcMap, create new printable map and in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 50.1. learner differentiates among geodatabases, shape files, layer files, CAD files, coverages and feature classes
- 50.2. learner uses ArcCatalog to create a personal geodatabase
- 50.3. learner uses Geodatabase Wizard
- 50.4. learner imports outside data
- 50.5. learner creates, adds, edits, and modifies geodatabase file

51. Create a feature class

Assessment Strategies

51.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 51.1. learner defines parameters when importing data to create new feature data class
- 51.2. learner uses New Feature Data Class Wizard
- 51.3. learner sets parameters for Feature Data Class
- 51.4. learner sets spatial references
- 51.5. learner creates new feature data class

52. Assess how to add fields and domains to geodatabases and feature classes

Assessment Strategies

52.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 52.1. learner uses ArcCatalog to define fields in Feature Data Classes
- 52.2. learner creates, modifies, and edits fields in feature data classes
- 52.3. learner sets domain properties for feature data classes
- 52.4. learner builds new feature data class

53. Draw features

Assessment Strategies

53.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 53.1. learner defines endpoints, lines, vertices, and edges
- 53.2. learner uses Draw Tools
- 53.3. learner uses Create New Feature Tool
- 53.4. learner uses Arc Tool
- 53.5. learner uses Distance-Distance Tool
- 53.6. learner uses Intersection Tool
- 53.7. learner uses Trace Tool
- 53.8. learner uses Digitizer Tool
- 53.9. learner uses Snap Tool
- 53.10. learner builds new features
- 53.11. learner draws new features

54. Use feature construction tools

Assessment Strategies

54.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

54.1. learner uses Sketch Tools

54.2. learner creates new features

55. Create new digital data

Assessment Strategies

55.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

55.1. learner uses Editor Toolbar

55.2. learner creates new features using Angle Command on the Sketch Tool

56. Elaborate how to edit features and attributes by deletion and modification

Assessment Strategies

56.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

56.1. learner uses Editor Toolbar to change, modify, and delete features

56.2. learner adds, moves, and deletes vertices

57. Merge and split features

Assessment Strategies

57.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

57.1. learner uses Split Command to create two features from one feature

57.2. learner uses Merge Command to create one Feature from two

57.3. learner uses Cut Polygon Tool

57.4. learner uses edit Tool to merge polygons

58. Examine how to edit feature attribute values

Assessment Strategies

58.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

58.1. learner uses Field Calculator Tool to change attribute values

58.2. learner creates new feature using editor Toolbar

58.3. learner adds and edits new field to attribute table

58.4. learner adds new fields from ArcCatalog

59. Create a map quickly by using a map template

Assessment Strategies

59.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 59.1. learner uses map templates to create a map quickly
- 59.2. learner opens and selects map templates
- 59.3. learner uses Pan Tool
- 59.4. learner uses Zoom to Whole Page Tool
- 59.5. learner edits graticule intervals
- 59.6. learner adds graticules to Data Frames

60. Add x,y data to an existing map

Assessment Strategies

- 60.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 60.1. learner adds x,y coordinate data to existing map
- 60.2. learner renames, edits, and saves new data layer

61. Draw graphics on a map

Assessment Strategies

- 61.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 61.1. learner uses Draw Toolbar to add graphics and text to existing map
- 61.2. learner adds title to map
- 61.3. learner adds text box to new map

62. Use Geography Network with ArcMap

Assessment Strategies

- 62.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 62.1. learner uses Geography Network to access online services
- 62.2. learner adds a map service to ArcMap
- 62.3. learner applies template to a map

63. Create the layout for a page

Assessment Strategies

- 63.1. using ArcMap, create new printable map, and in correct responses to test questions

Criteria

Performance will be satisfactory when:

- 63.1. learner differentiates among good map elements: Information, Revelation, Clarification, and Conviction
- 63.2. learner uses layout Toolbar
- 63.3. learner sets map orientation
- 63.4. learner uses guides to set layout
- 63.5. learner resizes and rearranges data frames on layout page
- 63.6. learner drags data frames around map page

64. Add a title

Assessment Strategies

- 64.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 64.1. learner uses insert menu
- 64.2. learner adds title to map
- 64.3. learner changes font, style, color and size of title
- 64.4. learner adds and edits subtitle to map
- 64.5. learner rotates title bars 90 degrees and places on map
- 64.6. learner draws new rectangle for map

65. Add a north arrow, scale bar, and legend

Assessment Strategies

- 65.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 65.1. learner uses Insert Menu to add, edit, and display North Arrow, scale bar, and legend to map
- 65.2. learner examines available objects and options in insert menu bar

66. Add final touches and set print options

Assessment Strategies

- 66.1. using ArcMap, create new printable map

Criteria

Performance will be satisfactory when:

- 66.1. learner adjusts scale bar sizes
- 66.2. learner adds photo image to map
- 66.3. learner adds borderlines to map
- 66.4. learner uses preview map to check quality before printing