COURSE OUTLINE

NET303

Prepared: Heath Bishop   Approved: Sherri Smith

Course Code: Title	NET303: ADVANCED GEOGRAPHIC INFORMATION SYSTEMS
Program Number: Name	5221: NAT ENVIRONMENT TY
Department:	NATURAL RESOURCES PRG
Semester/Term:	17F
Course Description:	This course builds on introductory GIS skills already obtained in previous courses (NET108). Focus is on effective data creation, collection, management and analysis. Topics covered include: efficient data capture methodology, creating & managing geodatabases, performing spatial analysis, performing 3D analysis, image georeferencing, advanced spatial queries, data manipulation, image processing, raster analysis, vector editing & GPS integration.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Vocational Learning Outcomes (VLO's): **Please refer to program web page for a complete listing of program outcomes where applicable.**	#2. Utilize natural resources information technology equipment to assemble, analyze and present identified ecosystem components for purposes of conserving and managing natural resources. #3. Apply the basic concepts of science to natural resource conservation and management. #4. Plan, design, implement and participate in the maintenance of natural environment assessments. #8. Contribute to the development, implementation and maintenance of environmental management systems. #10. Communicate technical information accurately and effectively in oral, written, visual and electronic forms.
Essential Employability Skills (EES):	#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #7. Analyze, evaluate, and apply relevant information from a variety of sources.

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	#10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	45%
Attendance	10%
Quizzes	5%
Tests	40%

Course Outcomes and Learning Objectives:

Course Outcome 1.

1. Apply knowledge of natural environment practices to plan, create & manage GIS data.

Learning Objectives 1.

1.1 Demonstrate geodatabase planning & creation.
1.2 Solve natural environment/management problems using GIS.

Course Outcome 2.

2. Use the ESRI ArcMap and ArcCatalog interface effectively.

Learning Objectives 2.

2.1 Load multiple vector and raster layers.
2.2 Maintain existing ArcMap projects used for data update.
2.3 Perform geoprocessing operations
2.4 Use ArcCatalog to interchange and convert file formats.
2.5 Customize toolbars for efficient usage.

Course Outcome 3.

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3. Manipulate attribute tables and perform tabular operations.

Learning Objectives 3.

3.1 Populate attribute tables.
3.2 Add, delete and calculate field records.
3.3 Perform table editing using the Field Calculator .

Course Outcome 4.

4. Create and print effective layouts and digital presentations.

Learning Objectives 4.

4.1 Manipulate layout properties and operations.
4.2 Export layouts to .pdf, or .tif formats for digital storage.
4.3 Demonstrate application of cartographic principles.

Course Outcome 5.

5. Use ArcToolbox to perform geoprocessing tasks.

Learning Objectives 5.

5.1 Analyze spatial data by buffering features, overlaying data and calculating attribute values.
5.2 Merge, dissolve, clip, union, erase, intersect and calculate areas tools to manipulate layers & evaluate results.
5.3 Reproject data for use with GPS units, and also to view within different UTM zones.

Course Outcome 6.

6. Integrate GPS field data with GIS Analysis.

Learning Objectives 6.

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6.1 Upload and download waypoints & tracks using DNR Garmin.
6.2 Incorporate GPS data into ArcGIS and Google Earth.

Course Outcome 7.

7. Demonstrate ability to Georeference Imagery.

Learning Objectives 7.

7.1 Describe the theory underlying georeferencing.
7.2 Collect GCPs using appropriate methods.
7.3 Rectify imagery.

Course Outcome 8.

8. Demonstrate the ability to perform Raster Processing.

Learning Objectives 8.

8.1 Explain theories underlying the raster datatype.
8.2 Perform geoprocessing tasks using rasters.
8.3 Perform raster site selection analysis.

Date:	Thursday, August 31, 2017
	Please refer to the course outline addendum on the Learning Management System for further information.