COURSE OUTLINE: NET316 - APPLIED GIS

Prepared: Heath Bishop
Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

Course Code: Title	NET316: APPLIED GIS
Program Number: Name	5221: NAT ENVIRONMENT TY
Department:	NATURAL RESOURCES PRG
Academic Year:	2022-2023
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: cartography, creating & managing geodatabases, performing spatial analysis, image georeferencing, advanced spatial queries, data manipulation, raster analysis, vector editing & GPS integration.
Total Credits:	2
Hours/Week:	2
Total Hours:	28
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**5221 - NAT ENVIRONMENT TY** VLO 2 Utilize natural resources information technology equipment to assemble, analyze and present identified ecosystem components for purposes of conserving and managing natural resources. VLO 3 Apply the basic concepts of science to natural resource conservation and management. VLO 4 Plan, design, implement and participate in the maintenance of natural environment assessments. VLO 8 Contribute to the development, implementation and maintenance of environmental management systems. VLO 10 Communicate technical information accurately and effectively in oral, written, visual and electronic forms.
Essential Employability Skills (EES) addressed in this course:	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. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems.

	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Academic success is directly linked to attendance. Missing more than 1/3 of the course hours in a semester shall result in an `F` Grade for the course.

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Apply knowledge of Natural Environment practices to plan, create & manage GIS data.	1.1 Demonstrate geodatabase planning & creation. 1.2 Solve natural environment/management problems using GIS.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Use the ArcGIS Pro interface in an effective manner.	2.1 Load multiple vector and raster layers. 2.2 Maintain existing ArcGIS Pro projects used for data update. 2.3 Perform geoprocessing operations. 2.4 Use ArcCatalog to interchange and convert file formats.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Manipulate attribute tables and perform tabular operations.	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	**Learning Objectives for Course Outcome 4**
4. Create effective layouts and digital presentations.	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	**Learning Objectives for Course Outcome 5**
5. Use ArcToolbox to perform geoprocessing tasks.	5.1 Analyze spatial data by buffering features, overlaying data and calculating attribute values. 5.2 Use various spatial analysis 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	**Learning Objectives for Course Outcome 6**
6. Integrate data collected in the field with GIS software.	6.1 Upload and download waypoints & tracks using DNR Garmin. 6.2 Incorporate mobile GPS data into ArcGIS Pro and Google Earth.
Course Outcome 7	**Learning Objectives for Course Outcome 7**
7. Demonstrate the ability to perform Raster Processing.	7.1 Explain theories underlying the raster datatype. 7.2 Display the ability to utilize DEM datasets.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignment 1	10%
Assignment 2	10%
Assignment 3	10%
Assignment 4	15%
Assignment 5	10%
Assignment 6	10%
Discussion	5%
ESRI Online Course	5%
Quizzes	10%
Tests	15%

Date: August 31, 2022

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.