NR 321B: EDITING & ANALYZING MAP DATA

New Course Proposal

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Originator

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Co-Contributor(s)

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Justification / Rationale

Rationale
Geographic Information Systems provides basic information for a variety of careers. As a fairly new field, one that is constantly growing and expanding, it is an important skill for current workers to add to their resume. Providing a non-credit option allows incumbent workers, unemployed workers and underemployed workers an opportunity to gain an introduction to GIS and basic map analysis skills.

Effective Term

Fall 2020

Credit Status

Noncredit

Subject

NR - Natural Resources

Course Number

321B

Full Course Title

Editing & Analyzing Map Data

Short Title

EDIT/ANALYZE MAP DATA

Discipline

Disciplines List
Forestry/Natural Resources (Range management; soil, air and water resources; fish/wildlife management; parks and recreation)

Modality

Face-to-Face

Catalog Description

Geographic Information Systems (GIS) are software systems that allow users to integrate spatially related information from spreadsheets with smart mapping capabilities. In this course, students work with ESRI ArcGIS software to learn fundamental concepts of performing GIS tasks: assessment of vector and raster systems, scale, resolution, map projection, coordinate systems; (GPS); querying and editing spatial analysis and modeling with GIS. Students will also learn how GIS technology can be applied to many fields including environmental research, government, business, real estate, health care, urban planning, fire technology, agriculture, landscape design, anthropology, and more. Students will learn how to create web-based interactive maps and web applications using ESRI's ArcGIS Online platform.

Schedule Description

This course provides an overview of GIS (geographic information system) technology. Prerequisite: NR 321A or concurrent enrollment

Non-credit Hours

81

Lecture Units

0

Lab Units
0
Lab Semester Hours
0

In-class Hours
45

Out-of-class Hours
36

Total Course Units
0
Total Semester Hours
81

Override Description
Noncredit courses do not have lecture and lab. The out of class hours were adjusted to provide the same total as the equivalent credit course.

Prerequisite Course(s)
NR 321A or concurrent enrollment

Required Text and Other Instructional Materials

Resource Type
Book

Author
Clemmer, Gina

Title
The GIS 20 Essential Skills

Edition
3rd

City
Redlands, CA

Publisher
Environmental Systems Research Institute, Inc.

Year
2017

College Level
Yes

Flesch-Kincaid Level
12.

ISBN #
978-1-58948-512-9

Resource Type
Book
Open Educational Resource
No

Author
David Smith, Nathan Strout, Christian Harder, Steven Moore, Tim Ormsby, and Thomas Balstrom

Title
Understanding GIS; An ArcGIS Pro Project Workbook

Edition
Fourth

City
Redlands, California

Publisher
ESRI Press

Year
2017

College Level
Yes

ISBN #
978-1589485266

Class Size Maximum
24

Entrance Skills
Define Geographic Information Systems (GIS) and identify how they are used to analyze data in a variety of disciplines.

Requisite Course Objectives
NR 321A-Define Geographic Information Systems (GIS) and identify how they are used to analyze data in a variety of disciplines. Understand the importance of metadata.

Entrance Skills
Understand the importance of metadata.

Requisite Course Objectives
NR 321A-Define Geographic Information Systems (GIS) and identify how they are used to analyze data in a variety of disciplines. Understand the importance of metadata.

Entrance Skills
Interact with two basic GIS data structures (raster and vector).

Requisite Course Objectives
NR 321A-Interact with the two basic GIS data structures (raster and vector). Show how to convert analogue data to digital data.

Entrance Skills
Use basic cartographic tools in designing a map layout such as projection, data management, scale, format and editing the map elements.

Requisite Course Objectives
NR 321A-Demonstrate how to use basic cartographic tools in designing a map layout such as projection, data management, scale, format, editing the map elements.

Entrance Skills
Use GIS to identify and query to solve problems.

Requisite Course Objectives
NR 321A-Use GIS to identify and query to solve problems.

Course Content

1. Querying data.
2. Using attributes queries.
3. Using location queries.
4. Joining and relating data.
5. Data Analysis.
6. Dissolving, clipping and buffering features.
7. Overlaying data.
8. Creating a data subset.
9. Using ModelBuilder.
10. Creating graphs.
11. Introduction to Spatial Analyst.
12. Creating and combining raster surfaces.
13. Analyzing raster surfaces.
14. ArcGIS Online.
15. Sharing ArcMap documents online.
16. Creating maps using ArcGIS Online.
17. Building online apps.
18. Creating story maps.
19. Working with Collector to map GPS points.

Course Objectives

	Objectives
Objective 1	Define Geographic Information Systems (GIS) and identify how they are used to analyze spatially related data in a variety of disciplines. Understand the importance of metadata.
Objective 2	Interact with the two basic GIS data structures (raster and vector). Show how to convert analogue data to digital data.
Objective 3	Explain uncertainty as it relates to coordinate systems, projection and map scale.
Objective 4	Use GIS to identify, query, and perform spatial analysis functions to solve problems.
Objective 5	Demonstrate competency with the ArcGIS software systems to enhance and interpret data.
Objective 6	Navigate the ArcGIS Online environment and competently use at least two online mapping tools.
Objective 7	Design and complete a GIS project from start to finish (data capture, data storage and management, analysis, and map presentation).

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Use the ESRI ArcGIS Desktop and Pro software to analyze and enhance spatially related data and to create an accurate map.
Outcome 2	Use the ESRI ArcGIS Online products to create online maps and interactive apps.
Outcome 3	Articulate how GIS can be used in scientific, business, and government applications.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Lecture	Instructor-led explanations of concepts.
Laboratory	Accurate completion of software tutorials.
Discussion	Class discussion with guest speakers.
Participation	Student-led explanations of concepts.

Experiential	Students design their own maps.
Demonstration, Repetition/Practice	Review quizzes requiring written responses.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Laboratory projects	Accurate completion of lab tutorials.	In Class Only
Presentations/student demonstration observations	Research and prepare a 10-minute presentation on a GIS concept.	Out of Class Only
Written homework	Weekly quizzes requiring short and essay answers.	Out of Class Only
Mid-term and final evaluations	Present a mid-term map project to the class and explain the steps that were taken to design the map. Create the presentation out of class.	In and Out of Class
Behavior assessment	Consistent participation and attendance in class. Helpful to other students.	In Class Only
Mid-term and final evaluations	Projects: out-of-class design a map from start to finish using an ArcGIS Online mapping tool. Present the project to the class. Demonstrate comprehension of data management, analysis, and project layout.	Out of Class Only
Written homework	Read and summarize articles about GIS use and mapping techniques.	Out of Class Only
Other	Out-of-class hours will be accounted for electronically through the learning management system.	Out of Class Only

Assignments

Other In-class Assignments

1. While completing the lab exercises, ask questions and offer to help other students when appropriate.
2. Complete additional exercises provided by the instructor.
3. Participate in class discussions and take notes on the lectures.
4. Engage with guest speakers by asking and answering questions, and offering helpful ideas.

Other Out-of-class Assignments

1. Students should expect to spend approximately 4 hours per week outside the class reviewing, reading, and preparing for mapping projects.
2. Review the PowerPoint lectures posted on Canvas.
3. Review videos posted on Canvas.
4. Review additional articles, ESRI periodicals, and websites provided by the instructor.
5. 5. Research mapping techniques and data management concepts which will apply to the class projects. Share with the class.
6. 5. Attend open lab hours when possible.

Grade Methods

Pass/No Pass Only

MIS Course Data

CIP Code

03.0101 - Natural Resources/Conservation, General.

TOP Code

011500 - Natural Resources

SAM Code

D - Possibly Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Other Non-credit Enhanced Funding

Approved Special Class
Not special class

Noncredit Category
Short-Term Vocational

Funding Agency Category
Not Applicable

Program Status
Program Applicable

Transfer Status
Not transferable

Allow Audit
No

Repeatability
Yes

Repeatability Limit
NC

Repeat Type
Noncredit

Justification
Noncredit courses are repeatable until students are comfortable they have achieved the skills and knowledge required to meet the objectives and outcomes of the course.

Materials Fee
No

Additional Fees?
No

Approvals

Curriculum Committee Approval Date
10/17/2019

Academic Senate Approval Date
10/24/2019

Board of Trustees Approval Date
11/13/2019

Chancellor's Office Approval Date
01/10/2020

Course Control Number

CCC000611589

Programs referencing this course

Geographic Information Systems Essentials Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=277/)
Geographic Information Systems for Business Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=320/)
Geographic Information Systems Spatial Analysis Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=321/)
Geographic Information Systems Data Acquisition Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=322/)