



**I. COURSE DESCRIPTION:**

The aim of this course is to introduce students to the use of Geographic Information Systems (GIS) as a source of immediate information and as an analytic tool for solving natural resource management problems. Students will be using ESRI's ArcGIS software.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

**Upon successful completion of this course, the CICE student will, with the assistant of a Learning Specialist, demonstrate the ability to:**

1. Be able to identify the usefulness of GIS applications in natural resource management.

Potential Elements of the Performance:

- define what a GIS is and does
- identify GIS software used by various agencies and the strength and weaknesses of each
- investigate solutions to real world natural resource management problems using GIS

2. Be able to use the ArcMap and ArcCatalog interface effectively

Potential Elements of the Performance:

- access and start the ArcMap software
- open and close projects and exit from the software correctly
- read the project window and understand it's graphical user interface
- use ArcCatalog to browse and access files in various directories
- back up files onto floppy disk
- re-boot the computer if the system locks up
- use Windows NT

3. Open a Map Document and use the user interface to create data frames and manipulate layers.

Potential Elements of the Performance:

- view and manipulate project properties
- manipulate view properties and operations
- manipulate layer (theme) properties and operations
- add layers to a view
- add labels to a layer
- make a layer active

4. Be able to manipulate basic TABLE properties and operations.

Potential Elements of the Performance:

- build a new table
- edit a table by adding and deleting fields
- perform a query using the Field Calculator function retrieve statistics and advanced calculations relating to a table
- make and save a summary table

5. Be able to create a basic CHART from a table.

Potential Elements of the Performance:

- manipulate chart properties and operations including type of chart, the chart axes, labels, scale and colors

6. Manipulate and customize the symbology for feature classes within a layer (theme).

Potential Elements of the Performance:

- change symbols for features in a layer
- save and load a legend
- access and retrieve different symbol palettes and add labels to symbols

7. Create and print a LAYOUT

Potential Elements of the Performance:

- manipulate layout properties and operations
- Add components to the layout including the data frame, the legend, the scale bar, the north arrow, the chart, the table, and picture

8. Use ArcToolbox to perform basic geoprocessing tasks.

Potential Elements of the Performance:

- be able to perform basic spatial data analysis by buffering features, overlaying data and calculating attribute values

9. Integrating GPS with GIS

Potential Elements of the Performance:

- be able to upload and download waypoints and tracks between a GPS and GIS using DNR Garmin
- be able to manually enter GPS coordinates into ArcGIS

### III. TOPICS:

1. Introducing ArcGIS desktop
2. Exploring ArcMap
3. Exploring ArcCatalog
4. Symbolizing features and rasters
5. Classifying features and rasters, labeling features
6. Querying data, joining and relating tables
7. Selecting features by location, preparing data for analysis
8. Analyzing spatial data, projecting data in ArcMap
9. Editing features and attributes
10. Geoprocessing using ArcToolbox
11. Making maps for presentation
12. Integrating GPS with GIS

### IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- None
- Students will receive appropriate handouts covering the course material when necessary. Students may obtain the following as a reference text if they desire.

Getting to Know ArcGIS desktop  
(2<sup>nd</sup> edition updated for ArcGIS 9)  
ISBN 1-58948-083-X ESRI Press

This text comes with a 180 day free trial version of ArcGIS (ArcView) which students can load onto their home computers. It will run on Windows 2000, Windows NT, and Windows XP but **not** on Windows 95 or 98.

### V. EVALUATION PROCESS/GRADING SYSTEM:

Evaluation will be based on practical tests, weekly quizzes and problem solving exercises.

Practical Tests 2 @ 25%	<b>50%</b>
Quizzes (weekly)	<b>10</b>
Exercises	<b><u>40</u></b>
	<b>100%</b>

Quizzes are given at the beginning of each class. Students who arrive late forfeit the quiz mark.

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 - 59%	1.00
F (Fail)	49% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field/clinical placement or non-graded subject areas.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject areas.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course	

## VI. SPECIAL NOTES:

### Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

### Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

### Plagiarism

Students should refer to the definition of “academic dishonesty” in the *Student Code of Conduct*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

### Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

## **VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

## **VIII. DIRECT CREDIT TRANSFERS:**

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.

**CICE Modifications:**

**Preparation and Participation**

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

**A. Tests may be modified in the following ways:**

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

**B. Tests will be written in CICE office with assistance from a Learning Specialist.**

***The Learning Specialist may:***

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

**C. Assignments may be modified in the following ways:**

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

***The Learning Specialist may:***

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

**D. Evaluation:**

Is reflective of modified learning outcomes.