

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: Geographic Information Systems (GIS)

CODE NO. : NET108 **SEMESTER:** ONE

PROGRAM: Renewable Energy & Green Construction Techniques

AUTHOR: Marie Alexander

DATE: September 2012 **PREVIOUS OUTLINE DATED:** September 2011

APPROVED: *"Corey Meunier"*

CHAIR **DATE**

TOTAL CREDITS: THREE

PREREQUISITE(S): NIL

HOURS/WEEK: FOUR

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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 environment/resources management problems. Students will be using ESRI's ArcGIS 10 software.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. *Be able to identify the usefulness of GIS applications in natural environment/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 environment/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
- re-boot the computer if the system locks up
- use the current Microsoft Windows software

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 data frame 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 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 LAYOUTPotential 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 geoprocessing tasks.Potential Elements of the Performance:

- be able to analyze spatial data by buffering features, overlaying data and calculating attribute values
- be able to properly use the merge, dissolve, clip, union, erase, intersect and calculate areas tools to manipulate layers

9. Integrating GPS with GISPotential 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
- be able to edit waypoints and tracks using the editor function
- be able to georeference an aerial photograph and/or satellite image

III. TOPICS:

- Introducing GIS
- Exploring ArcMap
- Exploring ArcCatalog
- Symbolizing Features and Rasters
- Classifying Features and Rasters
- Labeling Features
- Querying Data
- Joining and Relating Tables
- Selecting Features by Location
- Preparing Data for Analysis
- Analyzing Spatial Data in ArcMap
- Building GeoDatabases
- Creating Features
- Editing Features and Attributes
- Geocoding Addresses
- Making Maps from Templates
- Making Maps for Presentation
- Creating Models

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Students will receive appropriate handouts covering the course material when necessary.
- Students must obtain the following as a reference text:

Getting to Know ArcGIS Desktop for ArcGIS 10

ISBN 978-1-58948-260-9 ESRI Press

** Getting to Know ArcGIS Desktop includes one CD with exercise data and a code to download a trial version of ArcGIS Desktop 10, ArcEditor license (single use) **

V. EVALUATION PROCESS/GRADING SYSTEM:

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

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

PLEASE NOTE:

For a breakdown of individual marks by assignment by week refer to the course syllabus on LMS.

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.