SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Customizing GIS

CODE NO. : GIS 407   **SEMESTER:** W2001

PROGRAM: Geographic Information Systems Applications Specialist

AUTHOR: Dennis Paradine

DATE: Dec. 2000   **PREVIOUS OUTLINE DATED:** Jan. 2000

APPROVED:

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                         DEAN   **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S): GIS 415 – Acquiring and Building Spatial Data using ARC/INFO GIS

LENGTH OF COURSE: 5 hrs/wk x 13 wks   **TOTAL CREDIT HOURS:** 60

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I.   COURSE DESCRIPTION:
The power of Geographic Information Systems lies in the automation of
repetitive and complex spatial data loading and analysis tasks. Many GIS
operations can be automated to save time, produce consistent results and
present clients with products usable with limited GIS knowledge. Upon
successful completion of this course, the student will have a strong
foundation in Arc/Info AML and Visual Basic programming within a GIS.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1.   Program Macros in Arc\Info AML

       Potential Elements of the Performance:
       ▪ Describe and integrate Arc/Info AML programming concepts
       ▪ Program basic and complex macros to perform repetitive ArcEdit,
          ArcPlot, INFO and system integration operations
       ▪ Use branching and logical expressions, &if and &select directives,
          DO and WHILE loops and modular and routine programming
          concepts
       ▪ manage character strings, pass data between programs and
          debug AMLs

2.   Develop Arc/Info Menus

       Potential Elements of the Performance:
       ▪ Program drop-down and form menus
       ▪ Link menus and AMLs

3.   Customize ArcInfo with Visual Basic

       Potential Elements of the Performance:
       ▪ Understand ArcObjects and Visual Basic and their connection to
          ArcInfo 8
       ▪ Develop Visual Basic code to customize ArcInfo

4.   Customize ArcView with Avenue
       Potential Elements of the Performance:
       ▪ Understand Avenue object-oriented programming concepts and
          syntax
       ▪ Modify sample scripts to customize ArcView with Avenue

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III.   TOPICS:

1.   Programming Arc/Info AML Macros (21 hours)
   - Developing an AML
   - Variables, functions, directives and system commands
   - Accessing programs and menus, creating commands
   - Branching and logical expressions
   - &IF and &SELECT directives
   - DO and WHILE loops
   - Working with character strings in AML
   - Passing data between programs
   - Using routines in programs
   - Debugging AMLS

2.   Arc/Info Menus (4 hours)
   - Drop-down menu programming
   - Linking menus and AMLS

Assignments #1 and #2.   AML and MENU programming

Practical Theory Test #1. Topics covered to date

3.   Using Visual Basic to Customize ArcInfo (16 hours)
   - Customizing ArcInfo with Visual Basic and ArcObjects

Assignment #3. Customizing ArcInfo with Visual Basic

5.   Customizing ArcView with Avenue (4 hours)
   - Customizing ArcView with Avenue

Assignment #4. Advanced GIS programming

Practical Theory Test #2.   All topics covered in the course

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IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

ESRI. 1997. Arc Macro Language Workbook With CD: for Unix and Windows NT. Cambridge, Environmental Systems Research Institute, Inc.

V. EVALUATION PROCESS/GRADING SYSTEM:

Grading System:

Assignments (4)	60%
Practical Theory Tests (2)	40%
Total	100%

The following semester grades will be assigned to students in post-secondary courses:

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	3.75
B	70 – 79%	3.00
C	60 – 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual - Deferred Grades and Make-up*).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for the faculty member to report grades.	

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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 instructor
   and/or the Special Needs office. Visit Room E1204 or call Extension 493,
   717, or 491 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 post-secondary
   institutions.

   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 instructor. Credit for prior learning will be given upon
   successful completion of the following:

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.