SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Customizing GIS

CODE NO. : GIS418   **SEMESTER:** W2005

PROGRAM: Geographic Information Systems Applications Specialist

AUTHOR: Kevin Weaver

DATE: Dec. 2004   **PREVIOUS OUTLINE DATED:** Jan. 2004

APPROVED:

                                _____   _____

                                            DEAN   **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S): GIS401 – Visual Basic Programming
GIS403 – Introduction to Access

HOURS/WEEK: 4

Customizing GIS   GIS418

I.   COURSE DESCRIPTION:
The power of GIS lies in the automation of repetitive and complex GIS operations to save time, produce consistent results and present clients with products and interfaces usable with limited GIS knowledge. Upon successful completion of this course the student will have developed advanced GIS Visual Basic programming skills. Specific attention will be paid to Visual Basic 6.0, Visual Basic for Applications within ArcGIS, ArcObjects, and Structured Query Language (SQL).

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1.   Create projects in VB 6.0

     Potential Elements of the Performance:
     ▪   Understand the differences between VB 6.0 and VB .NET
     ▪   Create simple applications using VB 6.0

2.   Perform advanced Visual Basic programming

     Potential Elements of the Performance:
     ▪   Understand and use arrays and collections in VB
     ▪   Use COM technology in VB programming
     ▪   Perform SQL queries using VB
     ▪   Package VB applications for external use
     ▪   Use Active X controls with VB

3.   Customize ArcGIS with Visual Basic

     Potential Elements of the Performance:
     ▪   Understand the connection of ArcObjects and VB to ArcGIS
     ▪   Understand the role of UIControls
     ▪   Understand object modeling terminology specific to GIS
     ▪   Read UML diagrams
     ▪   Read ArcObjects object models
     ▪   Develop Visual Basic code to customize ArcGIS
     ▪   Work with SQL in ArcGIS

III. TOPICS:

1.   VB 6.0
     ▪   Introduction to the VB 6.0 interface
     ▪   Explore differences between VB 6.0 and VB .NET

- Produce simple applications in VB 6.0

2. Advanced Visual Basic Programming
    - Review of Introduction to VB material
    - Collections and arrays
    - COM components
    - ListBoxes and ComboBoxes
    - ADO Data Control
    - DataGrid control
    - Active X controls
    - Packaging Visual Basic programs
    - Using SQL in VB

3. Customize ArcGIS with Visual Basic
    - The connection of ArcObjects and VB to ArcGIS
    - UIControls
    - GIS object modeling terminology
    - UML diagrams
    - ArcObjects object models
    - Customizing ArcInfo with Visual Basic and ArcObjects
    - Several tutorials and exercises exploring the use of VBA and ArcObjects within ArcGIS

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

Burke, R. 2003. Getting to Know ArcObjects. ESRI Press.

Zeiler, M. 1999. Modeling our World, The ESRI Guide to Geodatabase Design. ESRI Press.

V.   EVALUATION PROCESS/GRADING SYSTEM:

VB Labs (2)	25%
VB Test	15%
ArcObjects Labs (3)	45%
ArcObjects Test	15%
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%	
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:

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 493 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 *Student Rights and Responsibilities*. 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.