

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Customizing GIS

CODE NO. : GIS 418 **SEMESTER:** W2002

PROGRAM: Geographic Information Systems Applications Specialist

AUTHOR: Dennis Paradine

DATE: Jan. 2002 **PREVIOUS OUTLINE DATED:** Jan. 2001

APPROVED:

	_____	_____
	DEAN	DATE

TOTAL CREDITS: 4

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

LENGTH OF COURSE: 4 hrs/wk x
13 wks **TOTAL CREDIT HOURS:** 52

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For additional information, please contact Kitty DeRosario, Dean
School of Engineering, Technology and Trades
(705) 759-2554, Ext. 642

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I. COURSE DESCRIPTION:

The power of Geographic Information Systems 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 ArcObjects and UML modeling, System Query Language (SQL) and the use of AML scripts within a Visual Basic environment.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Perform SQL queries

Potential Elements of the Performance:

- Understand the role of the System Query Language
- Perform SQL queries with core SQL commands
- Work with SQL in ArcGIS, Visual Basic and Access

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
- 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 ArcObjects object models
- Develop Visual Basic code to customize ArcInfo

4. Understand UML Modeling

Potential Elements of the Performance:

- Read UML models
- Create UML models for GIS database modeling

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III. TOPICS:

1. SQL Queries (8 hours)
 - System Query Language theory
 - Core SQL commands
 - Using SQL in ArcGIS, Visual Basic and ACCESS

Assignment #1. SQL

2. Advanced Visual Basic Programming (16 hours)
 - Collections and arrays
 - COM components
 - Active X controls
 - Packaging Visual Basic programs

Assignments #2 and 3. Visual Basic Programming

Practical Theory Test #1. Topics covered to date

3. Customize ArcGIS with Visual Basic (22 hours)
 - The connection of ArcObjects and VB to ArcGIS
 - UIControls
 - GIS object modeling terminology
 - ArcObjects object models
 - Customizing ArcInfo with Visual Basic and ArcObjects

Assignment #3. Customizing ArcGIS with Visual Basic

4. UML Modeling (6 hours)
 - UML Models
 - Create a UML model for a GIS application

Assignment #4. UML Modeling / Customizing ArcGIS with Visual Basic

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

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IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Zeiler, M. 2000. Modeling our World. ESRI Press.

Tsay, S. Visual Basic 6.0 Programming. Pearson Publishing.

V. EVALUATION PROCESS/GRADING SYSTEM:**Grading System:**

Assignments (4 or 5)	60%
Practical Theory Tests (2)	<u>40%</u>
Total	100%

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

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
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 <i>Policies & Procedures Manual - Deferred Grades and Make-up</i>).	
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.