SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Visual Basic For GIS

CODE NO. : GIS401   **SEMESTER:** 1

PROGRAM: Geographic Information Systems - Application Specialist

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DATE: May 2016   **PREVIOUS OUTLINE DATED:** Sept 2015

APPROVED: *"Corey Meunier"*   May 2016

                              Chair   **Date**

TOTAL CREDITS: 3

PREREQUISITE(S):

HOURS/WEEK: 3

I.   COURSE DESCRIPTION:

This is an introduction to programming course using Visual Basic.NET and Python.

Once the student becomes familiar with the Visual Basic programming environment and the basics of the language, the student will be ready to create their own programs, including programs for GIS. In doing so, the course will cover objects, properties, events, code development and testing.   As a final topic, an introduction to the Python programming language will be examined.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1.   **Introduction to Visual Basic Programming**

- Describe Visual Basic .NET
- Describe the Visual Basic programming language
- Describe programs, programming, applications, and program development
- Identify each of the phases in the development cycle
- Define an algorithm
- Define objects, attributes, and methods

2.   The Visual Basic .NET Integrated Development Environment

Potential Elements of the Performance:

- Start Visual Basic .NET
- Customize the Visual Basic .NET integrated development environment
- Open a Visual Basic .NET project
- Describe the basic components of the Visual Basic .NET integrated development environment
- Run a Visual Basic .NET project

- Set a property on a control
- Navigate the code window
- Modify code in an existing project
- Save a Visual Basic .NET project
- Print a Visual Basic .NET project's forms and code
- Use Visual Basic .NET Help
- Quit Visual Basic .NET

3. **Building an Application in the Visual Basic.Net Environment**

   Potential Elements of the Performance:

- Design a Visual Basic .NET application
- Start a new Visual Basic .NET project
- Change the size of a form
- Change property values of a form
- Add controls to a form
- Move and resize controls on a form
- Use the Label, TextBox, NumericUpDown, and Button controls
- Change the property values of controls
- Change the Name property to rename a control
- Write the code for a Click event procedure
- Display line numbers in the code window
- Use control properties in a method
- Document code with a comment header and comment statements

4. **Working with Variables, Constants, Data Types and Expressions**

   Potential Elements of the Performance:

- Use the RadioButton and GroupBox controls
- Use the Layout toolbar to size and align controls
- Set a default button on a form
- Lock controls on a form
- Declare variables and constants

- Use variables and constants within code
- Describe Visual Basic .NET data types
- Convert between data types
- Code a form Load event procedure
- Use the Option Strict statement
- Use arithmetic expressions
- Describe the order of operator precedence in code

5. **Decision Making**

Potential Elements of the Performance:

- Use the ComboBox control
- Use the If…Then…Else structure
- Use a nested If…Then…Else structure
- Use the Select Case selection structure
- Validate user input
- Use the MessageBox class
- Use string concatenation in code
- Use relational operators in code
- Use logical operators in code

6. ***Looping & misc***

Potential Elements of the Performance

- Change the default icon on the title bar of a form
- Use ListView controls to display a list of items on a form
- Use CheckBox controls in an application
- Use the Anchor property of controls
- Work with Collections in code
- Code a Do Until loop
- Code a Do While loop
- Code a For…Next and a For Each…Next loop
- Code a concatenation operator

● Code a keyboard event

7. **Using Menus, Common Dialogs, Procedures, Functions and arrays.**

Potential Elements of the Performance

● Add a menu bar and menus using the MainMenu control
● Add a shortcut menu to an application
● Use the StatusBar control and PictureBox control in an application
● Use common dialog boxes in an application to interact with the user
● Use one-dimensional and multidimensional arrays in code
● Use functions and sub procedures
● Write code to pass arguments to functions and sub procedures
● Describe the two methods for passing arguments to functions and procedures
● Create an enhanced message box with the MessageBox.Show() method
● Use a collection of controls to access properties and methods in code

8. **Invistigate the basics of Python and compare them to Visual Basic**

Potential Elements of the Performance

• Investigate each of the following and compare them to Visual Basic:
  - data types and variables
  - operators
  - if/then/else structure
  - switch/case
  - for loops
  - top/bottom while loops
  - list and dict data structures

III. TOPICS:

1. Introduction to Visual Basic Programming
2. The Visual Basic .NET Integrated Development Environment
3. Building an Application in the Visual Basic .NET Environment
4. Working with Variables, Constants, Data Types, and Expressions
5. Decision Making
6. Looping and Multiple Forms
7. Using Menus, Common Dialogs, Procedures, Functions, and Arrays
8. Introduction to Python

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Microsoft® Visual Basic 2010 for Windows Application,

by: Shelly/Hoisington   Cengage Learning

ISBN-13 9780538468459

V. EVALUATION PROCESS/GRADING SYSTEM:

Evaluation Methods	Weight
Quizzes	10%
Tests	60%
Assignments	30%
	100%

The following semester grades will be assigned to students in postsecondary courses:

Grade	Definition	Grade Point Equivalent
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)	below 50%	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. OTHER EVALUATION CONSIDERATIONS

1. In order to pass this course the student must obtain an overall test/quiz average of **50%** or better, as well as, an overall assignment average of **50%** or better. A student who is not present to write a particular test/quiz, and does not notify the professor beforehand of their intended absence, may be subject to a zero grade on that test/quiz.

2. There will be **no** supplemental or make-up quizzes/tests in this course unless there are extenuating circumstances.

3. Assignments must be submitted by the due date according to the specifications of the professor. Late assignments will normally be given a mark of zero. Late assignments will only be marked at the discretion of the professor in cases where there were extenuating circumstances.

4. Any assignment/projects submissions, deemed to be copied, will result in a **zero** grade being assigned to **all** students involved in that particular incident.

5. It is the responsibility of the student to ask the professor to clarify any assignment requirements.

6. The professor reserves the right to modify the assessment process to meet any changing needs of the class.

VII. SPECIAL NOTES:

Communication:
The professor reserves the right to use tools other than **D2L/LMS ,** such as
Microsoft Outlook, for the primary channel of communication.

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
may not be granted admission to the room.*

Absences due to medical or other unavoidable circumstances should be
discussed with the professor, otherwise a penalty may be assessed. The penalty
depends on course hours and will be applied as follows:

Course Hours	Deduction
5 hrs/week (75 hrs)	1.0% /hr
4 hrs/week (60 hrs)	1.5% /hr
3 hrs/week (45 hrs)	2.0% /hr
2 hrs/week (30 hrs)	3.0% /hr

Absentee reports will be discussed with each student. Final penalties will be
reviewed and assessed at the discretion of the professor.

VIII.   COURSE OUTLINE ADDENDUM:

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