

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 Specialist
AUTHOR: Frank Turco
DATE: Sept 2009 **PREVIOUS OUTLINE DATED:** Sept 2008
APPROVED:

CHAIR

DATE

TOTAL CREDITS: Three

PREREQUISITE(S):

HOURS/WEEK: 3

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I. COURSE DESCRIPTION:

The course will overview the tools Microsoft Visual Basic has to offer to build applications in Business and Geographic Information Systems, and how to incorporate the various components into these applications. The course will focus on introductory application building using Visual Basic .Net.

Once the student becomes familiar with the Visual Basic programming environment, 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. The course will also guide students to creating a Visual Basic front-end for database applications.

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
- Explain object-oriented programming (OOP) and design (OOD)
- Describe rapid application development (RAD)
- Identify the key components of .NET

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
- Use the Pmt function
- Use the Format\$ function

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 and Multiple Forms***

Potential Elements of the Performance

- Add additional forms to a project
- 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
- Code a form Resize event procedure
- Work with multiple code windows
- Specify a Startup object for a project

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

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

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Microsoft Visual Basic .NET, Complete Concepts and Techniques, by: Shelly Cashman Quasney Thomson Publishing

ISBN: 0-7895-6548

V. EVALUATION PROCESS/GRADING SYSTEM:

Tests / Quizzes	55%
Assignments	40%
Participation	5%

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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.	

Eligibility for X Grades/Upgrading of Incompletes When a student's course work is incomplete or final grade is below 60%, there is the possibility of upgrading to a pass when a student meets all of the following criteria: The student's attendance has been satisfactory. An overall average of at least 50% has been achieved. The student has not had a failing grade in all of the theory tests taken. The student has made reasonable efforts to participate in class and complete assignments.

Note: The opportunity for an X grade is usually reserved for those with extenuating circumstances. The nature of the upgrading requirements will be determined by the instructor and may involve one or more of the following: completion of existing labs and assignments, completion of additional assignments, re-testing on individual parts of the course or a comprehensive test on the entire course.

The professor reserves the right to adjust the mark up or down 5% based on attendance, participation, leadership, creativity and whether there is an improving trend.

A minimum of 80% attendance required in the labs and lectures.

- Students must complete and pass both the test and assignment portion of the course in order to pass the entire course.
- All assignments must be completed satisfactorily to complete the course.
- Late hand in penalties will be a zero grade unless prior permission is granted by the professor. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.
- Makeup tests are at the discretion of the professor and will be assigned to a maximum grade of 60%.
- The professor reserves the right to adjust the number of tests and quizzes based on unforeseen circumstances. The student will be given sufficient notice to any changes and the reasons thereof.
- It is expected that a student who is planning on being absent from class to please notify the Professor before hand.
- A student who is absent for 3 or more times without any valid reason or effort to resolve the problem will result in action taken.

Note: If action is to be taken, it will range from marks being deducted to a maximum of removal from the course.

VI. SPECIAL NOTES:

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.

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.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

The professor reserves the right to use other tools and / or techniques that may be more applicable. These other tools and / or techniques for effective communication will be discussed, identified and presented throughout the delivery of the course content.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

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.

Tuition Default:

Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of November will be removed from placement and clinical activities. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default.

Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.