
UNIVERSITY of TECHNOLOGY, MAURITIUS

# SCHOOL OF INNOVATIVE TECHNOLOGIES AND ENGINEERING

## Module Information Pack

## BSc (Hons) Computer Science with Network Security
## BCNS19ABFT
## BSc (Hons) Business Information Systems
## BIS18BFT
## Module Name: Visual Programming

## Module Code: PROG2106C

## Academic Year 2020 – Semester 1

**Programme Director: Dr (Mrs) S. ARMOOGUM/ Mr A. TULSI**

**Programme Coordinator: Mr. Dudley Tse**

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**Module Convenor:** Mr Ajit Kumar Gopee

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**Academic Tutoring:** Take appointment by mail

***Note: Kindly make requests for appointments by mail***

**Lecture Day and Time:** Fridays 12.30ï 16.30 (Lab G 1.2)

**Credits & Level:** 4 credits, Level 2

**Pre-requisites (If applicable):** Programming Essentials

**Co-requisites (If applicable):** OOP Basics desirable

**Method of Delivery**

**& frequency of Class:** 15 weeks; 15 x 4 hrs sessions including lectures, labs and Tutorial

**Method and Criteria**

**of Assessment:**

| | |
|---|---|
| Class test | 25% |
| Group Assignment | 25% |
| I.e. Total Coursework | 50% |
| + | |
| Written Examinations | 50% - 3 hrs |
| Total assessment | 100 % |

**Summary of Module Content:**

a. Introduction to the visual programming paradigm

b. Survey of visual programming tools

c. Prototyping and software development

d. Workshops in Visual Basic and Visual Interdev

e. HCI issues

f. Quality attributes of visual programming products

g. Professional programming conventions and protocols

**Module Aims:**

The aim of this module is mainly to allow the students' programming minds to visualize a process in which the program controls the sequence of steps that occur at run time, and the input data play a relatively passive role in regulating how those steps are carried out. Moreover, in designing such a program, the student visualizes a process that will always terminate once its steps are completed. VB.NET programs makes the student understand that they do not predict the control sequence that will occur but they are written to run reasonably to any particular sequence of events that may occur once execution begins. Finally the student will make use of Human Computer Interaction (HCI) in visual programming which concerns with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.

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**Learning Objectives and Outcomes:**

a. Introduction to Visual Programming Language and Environment

b. The Visual Basic.NET Language Fundamentalsï Statements, functions, operators, the IF statement and CASE, Looping and Counting

c. The controls from toolbox and advanced controls

d. Using Sub Procedures and Modules, using the Menu Editor, Basic 2D Animation

e. Error-Handling, Debugging

f. Files and Arrays

g Databases concepts

h. Database Application with ADO.NET

i. Database Queries with SQL and Database management

j. Database Reports Development

k. The HCI principles

l. Norman Design Principles and The Screen Design Process

# Lecture Schedule

| Week # | Lecture details | Practical details(If Any) |
|---|---|---|
| 1 | **Basic of VB.Net -** The .Net framework, Advantages over VB6, IDE, Solution Explorer, Code Editor, Creating simple solutions, Walkthrough the Code Editor. Saving solution, simple VB.Net controls. Walkthrough a VB.Net procedure. Variables and initializing, arithmetic expressions | Lab Work Working with some controls (labels, textbox and buttons)<br>**Assignment set** |
| 2 | **Fundamentals of VB.Net programs** Listbox, Constants, shared methods, validation (IsNumeric), Formatting function, conditional expressions (logical, relational, Boolean), the IF statement, nested IF, Select Case statement, the loops (For | Lab Work Calculations in VB.Net, the IF and Select Case and loops programs, the math class and the min, max round and sqrt methods. |
| 3 | **Working with sub procedures, functions and modules** input box and msgbox, pass by value/reference, modules, scopes and lifetimes, the With and the For Each | Lab Work Working with sub procedures, functions and modules. |

| | | |
|---|---|---|
| 4 | **Working with other windows controls** picture, combo box and list box (more), check box and radio, group box, scrollbars, Timer, chart, random functions | Lab Work Working with controls<br>**Assessment 1** |
| 5 | **Developing multi-form application and enhancing the user interface** adding new forms, MDI, Main Menu, Dialog boxes, Splash screen, Context menu (Shortcut menu), Toolbar, Status bar, Adding panel to status bar, Tool tips | Lab Work Working with menu |
| 6 | **Class Test** | Assignment Follow up<br>**Assessment 2** |
| 7 | **Error trapping and handling, Working with dates and arrays** structured exception handling, testing and debugging, dates and arrays | Lab Work handling errors and exercises on arrays |
| 8 | **Working with files** Creating sequential files, adding items, retrieving items, structured exception handling in files.<br>**Introducing HCI** | Lab Work Exercises on files manipulation |

| | | |
|---|---|---|
| 9 | **Introducing Database programming and ADO.Net** Hardware components of a multi-user systems, software components of a multi-user DB application, Introducing ADO.Net, Data Adaptor and Dataset. | Lab Work Simple application on DB connectivity **Assignment Follow up Assessment 3** |
| 10 | **Developing DB application using ADO.Net** Define connection, SQL statement, The Server Explorer, Creating the navigation commands **Norman Design Principles** | Lab Work Some enhanced DB applications |
| 11 | **Developing DB application programmatically using connection strings and SQL statement** | Lab Work Database maintenance |
| 12 | **Developing DB application programmatically using Data grids** | Lab Work Report exercises |
| 13 | **Assignment Submission + presentation** | **Strict Deadline.** |
| 14 | **Assignment Presentation / Revision** | |
| 15 | **Revision** | |

# READING LIST

**RECOMMENDED TEXT :**

1. An Introduction to VB.NET by David Schneider
2. The Essence of HCI by Christine Faulkner
3. Moving to VB.NET by Dan Appleman
4. Mastering VB.NET by Evangelos Petroutsos

**OTHER READING TEXT/ ARTICLES/ WEBSITES:**

1. www.msdn.microsoft.com
2. www.devexpress.com

**UTM PAST EXAM PAPERS:**

Past Exam Papers are downloadable on campus through the Intranet at the following address: http://www.utm.ac.mu/resource/Online_Resourceslist.php