

# **COSC 444 Productivity Tools and Fourth Generation Language**

**Prerequisite:** COSC 341 or IFMG 450

Develop an understanding of productivity issues and how Fourth Generation Languages (4GL) improve productivity as contrasted with 3GLs. Advances in the programming paradigm such as event-driven programming, objects, reusability, graphical user interface (GUI) design and development, information systems based on relational databases, and client/server technology are addressed. Students gain a practical experience with these concepts through an in-depth study of Visual Basic and the development of a GUI interface to a relational database using Visual Basic.

## **Course Objectives:**

1. Develop a precise definition of the essential characteristics common in 4GLs.
2. Understand the pressures and motivation for using 4GLs.
3. Develop an understanding of the components present in the new technology for developing systems. Including: event driven programming, objects, methods, attributes, reusability, client/server, GUI design.
4. Gain indepth practical experience with systems development using the new technology as present in Visual Basic by implementing an information system using Visual Basic to create a GUI interface to a relational database.
5. Understand and gain indepth experience using the Visual Basic programming environment to create and debug programs.
6. Understand objects, property lists and methods present in Visual Basic.

## **Course Outline:**

The Course Text: Murach VB2005 ISBN:10: 1-890774-38-3

Other materials will either be provided or placed on reserve at the library or in Str. 107.

- Course Introduction and Administration, Why Fourth Generation Languages. Read and report on a 4GL article.
- Introduction to Event Driven Programming for Windows
- A Sample Visual Basic Application
- The Visual Basic Programming Environment
- Applications Development in Visual Basic
- Forms, Properties and Events
- Introduction to Writing Event Procedures
- GUI Design Concepts and Standards
- Using Toolbox Controls
- Project Management
- Using Dialog Boxes

- Develop Sample Application
- Interfacing to a Database Using the Data Control
- Error Handling and Trapping
- Mouse Events
- Keyboard Events
- Grid Control
- Visual Basic Definition of the Database Object
- Accessing a Database Without Use of a Data Control
- Accessing a Server Database
- Custom Menus
- Professional Edition Controls

### **Evaluation Methods:**

Midterm Project	1	25
Final Project	1	50
Homework	6-10	25

Total 100

Projects will be graded according to good design, good style, and functionality included in the project.

All earned points will be totaled and 100%-90% of the total possible will earn an A, 89-80% of the total possible will earn a B, 79%-70% of the total possible will earn a C, 69%-60% of the total possible will earn a D, 59% and lower will earn an F.

Note that evaluation methods may differ slightly under different instructors and chapter reading assignments may change should a different text book be selected.

### **Special Resource Requirements.**

Currently, sufficient copies of Visual Basic 2005 or 2008, MS Access 2.0 and MS SQL Server are available to service thirty students.

- Computer Science Department
- Stright Hall, Room 319  
210 South Tenth Street  
Indiana, PA 15705
- Phone: 724-357-2524
- Fax: 724-357-2724
- Office Hours
- Tuesday and Thursday

- 4:00 p.m. – 5:00 p.m.

© 2007–2009 Indiana University of Pennsylvania | 1011 South Drive, Indiana,  
PA 15705 | 724-357-2100