**COLLEGE OF INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**COURSE SYLLABUS/SPECIFICATION**

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| **CODE & TITLE:** | **ITCS 222 – Visual Programming** |
| **WEIGHT:** | **(2 - 2 - 3)** |  |
| **PREREQUISITE:** | **ITCS 122** |  |
| **DESCRIPTION:** | This course introduces Windows programming environment. Students learn how to write and develop programs with a polished graphical user interface (GUI) using event-driven programming language, which is Visual Basic. Topics include data types and structures, arithmetic and logical operators, declarations and input/output, control structures, and functions. Emphasis is placed on the development of problem- solving skills. |
| **OBJECTIVES:** | 1. To understand the concepts and techniques of event-driven programming.2. To examine the modular programming using subroutine, function, and modules.3. To create and implement user-defined data types such as arrays, structures, files, and database using Visual Basic.4. To understand the Visual Basic Integrated Development Environment (IDE) and Windows programming by writing, executing and debugging Visual Basic programs. |
| **SEMESTER:**  |  | **ACADEMIC YEAR:**  |
| **INSTRUCTOR:**  |
| **OFFICE TEL.:**  |
| **EMAIL:**  |

**INTENDED LEARNING OUTCOMES (ILOS)**

Upon successful completion of the course, students should be able to:

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|  **A. Knowledge and Understanding**  |
| **A1** | Concepts and Theory: Demonstrate understanding and detailed knowledge of the concepts of event-driven programming, IDE environment and GUI programming techniques**.** |
| **A2** | Trends, Problems and Research: NA |
| **A3** | Professional Responsibility: NA |

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|  **B. Subject-Specific Skills**  |
| **B1** | Problem Solving: Identify a real world problem and solve it by using visual basicprogramming language. |
| **B2** | Modeling and Design: Design computer applications and create prototypes to meet givenrequirements. |
| **B3** | Application of Methods and Tools: Apply Visual Basic software to write, execute and correct the syntax, logical and run time errors. |

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|  **C. Thinking Skills**  |
| **C1** | Analytic: Analyze problem specification and use appropriate visual programming constructs to meet these requirements. |
| **C2** | Synthetic: Integrate different visual programming constructs such as database and modules while developing real life projects. |
| **C3** | Creative**:** Apply new and/or using conventional programming techniques innovatively for solving real world problems. |

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| **D. General and Transferable Skills (Other Skills Relevant to Employability and Personal****Development)** |
| **D1** | Communication Skills**:** NA |
| **D2** | Teamwork and Leadership: NA |
| **D3** | Organizational and Developmental Skills: Demonstrate ability to organize ideas andeffectively allocate time in given assignment. |
| **D4** | Ethical and Social Responsibility: NA |

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| **Course Structure (Outline)** |
| **Week** |  | **Hour** |  | **ILOs** | **Topics** | **Teaching****Method** | **Assessment****Method** |
|  | **Lec.** | **Lab** |  |  |  |  |
| 1 | 2 |  |  | 2 | A1 | Introduction to Event-DrivenProgramming. | Lectures/LabDemonstration |  |
| 2 | 2 |  |  | 2 | A1, B3 | **GUI :**Labels, Textboxes, Buttons, Group Boxes, Panels, Check box, Radio buttons ToolTips, Event Handling. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 3 | 2 |  |  | 2 | A1, B3 | **Relational Operators:**Compound Assignment Operators, Equality and Relational Operators. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 4 | 2 |  |  | 2 | A1, B3 | **Math Built-in Function:**Sqrt, Round, Int, Implicit Argument Conversions, Option Strict and Data-Type Conversions. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 5 | 2 |  |  | 2 | A1, B3 | **String:**Create and Manipulate the String Objects of String and String Builder Classes. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 6 | 2 |  |  | 2 | A1, B1, B3 | **Control Statements- GUI :**Mouse-event Handling, Keyboard-Event Handling, checklist box control, Menus, Tab control. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 7 | 2 |  |  | 2 | A1, B1, B2, B3, C1, D3 | **Control Statements - GUI:**List control, Combo Box control, Date Time Picker, Month calendar control. | Lecture/ In-LabSupervised Work | In-Lab Exercises/ Assignment 1 |
| 8 | 2 |  |  | 2 | A1, B1, B3,C1 | **Repetition Statements:**Different types of loops. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 9 | 2 |  |  | 2 | A1, B1, B3, C1, C2 | **Modules and Procedures:**Creating procedures, specifying the scope, types of procedures and calling the procedures. | Lecture | Lab Test 1 |
| 10 | 2 |  |  | 2 | B1, B3 | **Other Control Statements:**Logical Operators, Exit Terminate Repetition Statements, Continue Repetition Statements. | Lecture/ In-LabSupervised Work | In-LabExercises |
| 11 | 2 |  |  | 2 | B3 | **Syntax Error Correction:**Using the Debugger by | LabDemonstration | In-LabExercises |

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|  |  |  |  | locating Logic Errors and RunTime Errors. |  |  |
| 12 | 2 | 2 | A1, B1, B2,B3, C1, C2, D3 | **Sub Procedures, Function****and Modules** | Lecture/ In-LabSupervised Work | In-LabExercise/ Assignment 2 |
| 13 | 2 | 2 | A1, B1, B3, C1 | **Arrays:**One-Dimensional andMultidimensional | Lecture/ In-LabSupervised Work | In-LabExercise |
| 14 | 2 | 2 | B3, C2 | **Accessing Text Files:**Read/Write a text file line by line**Accessing Databases:**Creating a DatabaseApplication in Visual Basic | LabDemonstration | Lab Test 2 |
| 15 | 2 | 2 | B1, B2, B3,C1, C2, C3, D3 | Student Project | ProjectSupervision | ProjectPresentation |
| 16 | 2 | - | A1, B1, B2,C1, C2 | **All Topics** |  | Final Exam |

**TEACHING MATERIALS:**

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| **TEXTBOOK(S):** | Deitel P. and Deitel H. (2012) *Visual Basic 2012 how to Program,* 6th Edition, PrenticeHall. |
| **HANDOUT(S):** | PowerPoint slides available on Moodle i.e. <http://www.ahlia.edu.bh/moodle> |
| **REFERENCE(S):** | 1. Gaddis T. and Irvine K. (2016) *Starting Out With Visual Basic*, 7th Edition, Pearson.2. Schneider D. (2016) *Introduction to Programming Using Visual Basic*, 10thEdition, Pearson. |

**ASSESSMENTS:**

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| **Type of****Assessment** | **Description** | **ILOs** | **Weighting** |
| Lab Tests | Two practical tests to be given to students during labtime where each will take two hours and worth 15 marks. The total of both tests will be considered at the end.The first test will cover topics from week 1 to 8 and the second test will cover topics from week 9 to 14. | B1, B3, C1, C2 | 30% |
| Assignments | Two assignments will be given to students and theiraverage will be considered. These assignments will assess students’ skills in using different visual programming constructs to solve given problems. | A1, B1, B2, B3, C1, C2, D3 | 10% |
| In-LabExercises | Exercises will be conducted in the lab and it will allowthe students to practice all the topics covered in the course such as designing forms, using built-in functions, writing procedures, etc. | B1, B3, C1, C2 | Formative |

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| Project | One practical project will be given the students to assesstheir skills in applying the different concepts learned during the course in solving a real-life problem. The project covers all the chapters comprehensively. | B1, B2, B3, C1, C2, C3, D3 | 20% |
| Final Exam | Final exam will be for two hours, including all types ofquestions: MCQs, short answers questions, problem solving, etc. | A1, B1, B2, C1, C2 | 40% |
| **Overall** |  |  | **100%** |

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