

**COLLEGE OF INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**COURSE SYLLABUS/ SPECIFICATION**

**Course Code & Title: ITCS 222 - Visual Programming**

**Weight: (2 - 2 - 3)**

**Prerequisite: ITCS 122**

**NQF Level Allocated: 6 NQF Notional Hours / Credits: 120/ 12**

**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.

**Objective:**

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:**

**Instructor(s):**

**Office Telephone: Email (s):**

**Intended Learning Outcomes (ILOs):**

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| 1. **Knowledge and Understanding** | | | **NQF Descriptor/ Level** | | |
| **A1** | | **Concepts and Theories:** Demonstrate understanding and detailed knowledge of the concepts of event-driven programming, IDE environment and GUI  Programming techniques | Knowledge: theoretical understanding [Level 6] | | |
| **A2** | | **Contemporary Trends, Problems and Research:** | N/A | | |
| **A3** | | **Professional Responsibility:** | N/A | | |
| 1. **Subject-specific Skills** | | | | **NQF Descriptor/ Level** | |
| **B1** | | **Problem Solving:** Identify a real world problem and solve it by using visual basic programming language | | Knowledge: Practical  Application [Level6]  Skills: Communication, ICT & Numeracy [Level6] | |
| **B2** | | **Modeling and Design:** Design computer applications and create prototypes to meet given requirements. | | Knowledge: Practical  Application  [Level6] | |
| **B3** | | **Application of Methods and Tools:** Apply Visual Studio software to write, execute and correct the syntax, logical and run time errors. | | Knowledge: Practical  Application [Level6]  Skills: Communication, ICT  & Numeracy [Level6] | |
| 1. **Critical-Thinking Skills** | | | | **NQF Descriptor/ Level** | |
| **C1** | | **Analytic skills:** Analyze problem specification and use appropriate visual programming constructs to meet these requirements. | | Generic Problem Solving & Analytical skills [Level6] | |
| **C2** | | **Synthetic:** Integrate different visual programming constructs such as database and modules while developing real life projects. | | Generic Problem Solving & Analytical skills [Level6] | |
| **C3** | | **Creative Thinking and innovation:** Apply new and/or using conventional programming techniques innovatively for solving real world problems. | | Generic Problem Solving & Analytical skills [Level6] | |
| 1. **General and Transferable Skills (other skills relevant to employability and personal development)** | | | | | **NQF Descriptor/ Level** | |
| **D1** | **Communication:** | | | | N/A | |
| **D2** | **Teamwork and Leadership:** | | | | N/A | |
| **D3** | **Organizational and Developmental Skills:** Demonstrate ability to organize ideas and effectively allocate time in given assignment. | | | | Competence: Autonomy, Responsibility and Context [Level6] | |
| **D4** | **Ethics and Social Responsibility:** | | | | N/A | |

**Course Structure (Outline)**

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| **Course Structure (Outline)** | | | | | | | | |
| **Week** |  | **Hour** | |  | **ILOs** | **Topics** | **Teaching Methods** | **Assessment Method** |
|  | **Lec.** | | **Lab** | |  |
| 1 | 2 |  |  | 2 | A1 | Introduction to Event-Driven  Programming. | Lectures/Lab  Demonstration |  |
| 2 | 2 |  |  | 2 | A1, B3 | **GUI :**  Labels, Textboxes, Buttons, Group Boxes, Panels, Check box, Radio buttons ToolTips, Event Handling. | Lecture/ In-Lab  Supervised Work | In-Lab  Exercises |
| 3 | 2 |  |  | 2 | A1, B3 | **Relational Operators:**  Compound Assignment Operators, Equality and Relational Operators. | Lecture/ In-Lab  Supervised Work | In-Lab  Exercises |
| 4 | 2 |  |  | 2 | A1, B3 | **Math Built-in Function:**  Sqrt, Round, Int, Implicit Argument Conversions, Option Strict and Data-Type Conversions. | Lecture/ In-Lab  Supervised Work | In-Lab  Exercises |
| 5 | 2 |  |  | 2 | A1, B3 | **String:**  Create and Manipulate the String Objects of String and String Builder Classes. | Lecture/ In-Lab  Supervised Work | In-Lab  Exercises |
| 6 | 2 |  |  | 2 | A1, B1, B3 | **Control Statements- GUI :**  Mouse-event Handling, Keyboard-Event Handling, checklist box control, Menus, Tab control. | Lecture/ In-Lab  Supervised Work | In-Lab  Exercises |
| 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-Lab  Supervised Work | In-Lab Exercises/ Assignment 1 |
| 8 | 2 |  |  | 2 | A1, B1, B3,C1 | **Repetition Statements:**  Different types of loops. | Lecture/ In-Lab  Supervised Work | In-Lab  Exercises |
| 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-Lab  Supervised Work | In-Lab  Exercises |
| 11 | 2 |  |  | 2 | B3 | **Syntax Error Correction:**  Using the Debugger by locating Logic Errors and Run Time Errors. | Lab  Demonstration | In-Lab  Exercises |
| 12 | 2 | | 2 | | A1, B1, B2,  B3, C1, C2, D3 | **Sub Procedures, Function**  **and Modules** | Lecture/ In-Lab  Supervised Work | In-Lab  Exercise/ Assignment 2 |
| 13 | 2 | | 2 | | A1, B1, B3, C1 | **Arrays:**  One-Dimensional and  Multidimensional | Lecture/ In-Lab  Supervised Work | In-Lab  Exercise |
| 14 | 2 | | 2 | | B3, C2 | **Accessing Text Files:**  Read/Write a text file line by line  **Accessing Databases:**  Creating a Database  Application in Visual Basic | Lab  Demonstration | Lab Test 2 |
| 15 | 2 | | 2 | | B1, B2, B3,  C1, C2, C3, D3 | Student Project | Project  Supervision | Project  Presentation |
| 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, Prentice Hall |
| **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, 10th Edition, Pearson. |

**Assessment**

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| **Method of Assessment** | **Description** | **Learning Outcomes** | **Weighting** |
| **Lab Tests** | Two practical tests to be given to students during lab time 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 their average 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-Lab Exercises** | Exercises will be conducted in the lab and it will allow the 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 |
| **Project** | One practical project will be given the students to assess their 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 of questions: MCQs, short answers questions, problem solving, etc. | A1, B1, B2, C1, C2 | 40% |
| **Overall:** | | | **100 %** |

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| **Admissions** | |
| **Minimum number of students** | **5** |
| **Maximum number of students** | **20** |

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| **Ahlia University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see** [www.ahlia.edu.bh/integrity](http://www.ahlia.edu.bh/integrity) **for more information).** |