

**COLLEGE OF INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**COURSE SYLLABUS/SPECIFICATION**

|  |  |
| --- | --- |
| **CODE & TITLE:** | **ITCS 122 – Introduction to Programming Techniques** |
| **WEIGHT:** | **(2 - 2 - 3)** |  |
| **PREREQUISITE:** | **ITCS 101** |  |
| **DESCRIPTION:** | This course introduces the fundamental concepts of computer programming. The covered topics are primitive data types and operators, input/output, control statements, methods and functions, arrays and strings, classes and objects, and an introduction to Java applications and object-oriented design techniques. Emphasis is placed on the development of problem-solving skills. |
| **OBJECTIVES:** | 1. To understand the fundamentals of computer programming and programming languages.2. To understand how to model and design a solution for a problem using algorithms and flowcharts.3. To understand the programming language principles, operators, conditional and repetition statements, various built-in-functions such as mathematical, and string functions.4. To create and implement user-defined data types such as arrays.5. To gain facility in the writing, executing and debugging programs written in java language. |
| **SEMESTER:**  |  | **ACADEMIC YEAR:**  |
| **INSTRUCTOR:**  |
| **OFFICE TEL:**  |
| **EMAIL:**  |

**INTENDED LEARNING OUTCOMES (ILOS)**

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

|  |
| --- |
|  **A. Knowledge and Understanding**  |
| **A1** | Concepts and Theories: Demonstrate a detailed knowledge and understanding of the maintheories, principles and concepts embedded in the process, properties and techniques, employed in computer programming in a Java environment. |
| **A2** | Contemporary Trends, Problems and Research: NA |
| **A3** | Professional Responsibility: NA |
|  **B. Subject-Specific Skills**  |
| **B1** | Problem Solving: Solve simple problems using programs written in the computerprogramming language JAVA. |
| **B2** | Modeling and Design: Formulate overall structure of the program and design the algorithmsthat meet specifications. |
| **B3** | Application of Methods and Tools: Apply Java tools to build, develop, design, implement,test, debug and deploy java programs. |
|  **C. Thinking Skills**  |
| **C1** | Analytic: Analyze problem specification and effectively use fundamental programmingconstructs to meet the specification. |
| **C2** | Synthetic: NA |
| **C3** | Creative: NA |
| **D. General and Transferable Skills (Other Skills Relevant to Employability and Personal****Development)** |
| **D1** | Communication: 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 |

|  |
| --- |
| **Course Structure (Outline)** |
| **Week** | **Hours** | **ILOs** | **Unit/Module or Topic Title** | **Teaching****Method** | **Assessment****Method** |
| **Lec.** | **Lab** |
| 1 | 2 | 2 | A1 | Introduction to Computersand Problem Solving. | Lecture |  |
| 2 | 2 | 2 | B2 | Problem Solving and SolutionDesign. | Lecture/ In-Class Supervised Work |  |
| 3 | 2 | 2 | A1, B3 | Introduction to Javaenvironment. | Lecture/ LabDemonstration |  |
| 4 | 2 | 2 | A1, B3 | Arithmetic manipulation andOperators.Introduction to classes, Objects and Methods. | Lecture/ LabDemonstration/ In-Lab Supervised Work | In-LabExercises |
| 5 | 2 | 2 | A1, B3 | Numbers and variables (local and global variables), Common Programming Errors. | Lecture/ LabDemonstration/ In-Lab Supervised Work | Lab Project 1 |
| 6 | 2 | 2 | A1, B1, B3, D3 | Assignment operators, Logical operators, java API Packages. | Lecture/ LabDemonstration/ In-Lab Supervised Work/ Project Supervision | In-LabExercises |
| 7-8 | 4 | 4 | A1, B1, B2, B3, C1, D3 | Control statement: simple-if and nested-if. | Lecture / In-Lab Supervised Work / Project Supervision | Lab Project 2 (Week8) |
| 9-10 | 4 | 4 | B1, B2, B3, C1 | Control statement: switch statement, Math class methods. | LabDemonstration/ In-Lab Supervised Work | Major Test(Week10) |
| 11 | 2 | 2 | A1, B3 | Repetition (while-loop, do-while, for-loop). | Lecture/ LabDemonstration | In-LabExercises |
| 12 | 2 | 2 | B1, B2, B3, C1 | Repetition (while-loop, do- while, for-loop). | In-Lab Supervised Work | Lab Test |
| 13 | 2 | 2 | A1, B1, B2, B3, C1, D3 | Repetition (while-loop, do- while, for-loop) & Array. | Lecture/ProjectSupervision | Lab Project 3 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 14 | 2 | 2 | A1, B3 | Arrays (1D Array). | LabDemonstration | In-LabExercises |
| 15 | 2 | 2 | B1, B2, B3, C1, D3 | 2D Arrays. | In-LabSupervised Work/ Project Supervision | Lab Project 4 |
| 16 | 2 | - | A1, B1, B2, C1 | All Topics |  | Final Exam |

**TEACHING MATERIALS:**

|  |  |
| --- | --- |
| **TEXTBOOK(S):** | Deitel T. R. Nieto. (2015) *Java How to Program*, 10th Edition, Prentice Hall. |
| **HANDOUT(S):** | Internal handouts (Hardcopies) prepared by course instructors.PowerPoint slides available on Moodle i.e. <http://www.ahlia.edu.bh/moodle> |
| **REFERENCE(S):****WEBSITE(S):** | 1. Malik D. (2012) *Java* Programming*: From Problem Analysis to Program Design*,5th edition, Cengage Learning.2. Liang Y. D. (2013) *Introduction to Java Programming, Brief Version*, 9th Edition, Pearson Education.3. Savitch W. (2014) *Java: An Introduction to Problem Solving and Programming*,7th Edition, Pearson Education.[http://www.javatutorialhub.com](http://www.javatutorialhub.com/) [http://www.freejavaguide.com](http://www.freejavaguide.com/corejava.htm) |

**ASSESSMENT:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of****Assessment** | **Description** | **ILOs** | **Weighting** |
| Lab Test | The knowledge of students will beevaluated throughout practical test, students should easily trace programs, configure the errors which may occur and rectify them by themselves. | B1, B3, C1, D3 | 30% |
| Major Test | The students will be assessed throughtheoretical test concentrating on three chapters to evaluate their acquaintance and understanding in the language of JAVA. | A1, B1, B2, C1 | 10% |
| Lab Projects | The students will be assessed on theirpractical application to create simple four projects which are covered through the chapters. Each project worth 20%, and average of best 3 projects will be taken. | B1, B2, B3, C1, D3 | 20% |
| In-Lab Exercises | The students will be evaluated through anumber of exercises focusing on certain | B1, B3 | Formative |
| chapters to assess their knowledge andunderstanding in the area of fundamental of computing programming JAVA. |
| Final Exam | This is a theoretical exam which will assessthe students’ overall knowledge and understanding of computational methods, logical operators, conditional statements, iteration statements and Arrays. | A1, B1, B2, C1 | 40% |
| **Overall** |  |  | **100%** |

***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).***