

**COLLEGE OF INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**COURSE SYLLABUS/SPECIFICATION**

**CODE & TITLE: ITCS 336 – Database Administration I**

**WEIGHT: (2 - 2 - 3)**

**PREREQUISITE: ITCS 323**

**NQL Level Allocated: 8**

**NQF Notional Hours / Credits:**  **120 notional hours/ 12 NQF credit**

**DESCRIPTION:** This course gives students critical knowledge and expertise on administrating the industry’s most advanced database (DB) management system. This includes: installing Database, controlling the databases, backup and recovery and administrating users’ security.

**OBJECTIVES:** 1. To critically identify the tools for administrating an DB.

2. To deeply understand the different types of users, their roles and responsibilities.

3. To identify the types of failure that can occur in DB.

4. To deeply understand essential security-related aspect of DB and its users.

**SEMESTER: ACADEMIC YEAR: INSTRUCTOR:**

**OFFICE TEL: EMAIL:**

**INTENDED LEARNING OUTCOMES (ILOS)**

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| **A. Knowledge and Understanding** | | | | **NQF Descriptor/ Level** |
| **A1** | | Concepts and Theories: Recognize critical concepts and principles related to administrating Database such as: installing and configuring DB environment, creating users and granting them privileges and roles, data backup and recovery and managing DBMS failure. | | Knowledge: theoretical understanding  [Level 8 ] |
| **A2** | | Contemporary Trends, Problems and Research: N/A | |  |
| **A3** | | Professional Responsibility: N/A | |  |
| **B. Subject-Specific Skills** | | | **NQF Descriptor/ Level** | |
| **B1** | Problem Solving: Show ability to install, configure and maintain Database as well as manage its users. | | Knowledge: Practical Application  [Level 8 ]  Skills: Communication, ICT & Numeracy  [Level 8 ] | |
| **B2** | Modeling and Design: N/A | |  | |
| **B3** | Application of Methods and Tools: Apply specialized tools while installing DFMS software  as well as creating a database, managing and maintaining it; such as Database Configuration  Assistant (DBCA) and Oracle Universal Installer (OUI) | | Knowledge: Practical Application  [Level 8 ]  Skills: Communication, ICT & Numeracy  [Level 8 ] | |
| **C. Thinking Skills** | | | **NQF Descriptor/ Level** | |
| **C1** | Analytic: Critically evaluate how DBMS and its applications can best use the available computer resources as well as compare and contrast various configurations and choose the most appropriate one as per user requirements. | | Generic Problem Solving & Analytical skills [Level 8 ] | |
| **C2** | Synthetic: N/A | |  | |
| **C3** | Creative: N/A | |  | |
| **D. General and Transferable Skills (Other Skills Relevant to Employability and Personal**  **Development)** | | | **NQF Descriptor/ Level** | |
| **D1** | Communication: The ability to express and communicate ideas in oral and written form. | | Communication, ICT and Numeracy Skills [Level 8 ] | |
| **D2** | Teamwork and Leadership: N/A | |  | |
| **D3** | Organizational and Developmental Skills: Demonstrate ability to organize ideas and  effectively allocate time in a given assignment. | | Competence: Autonomy, Responsibility and Context [Level 8 ] | |
| **D4** | Ethical and Social Responsibility: N/A | |  | |

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| **Course Structures (Outline)** | | | | | | |
| **Week** | **Hours** | | **ILOs** | **Unit/Module or Topic Title** | **Teaching**  **Method** | **Assessment**  **Method** |
| **Lec.** | **Lab** |
| 1 | 2 | 2 | A1 | **Introduction** and syllabus distribution. | Lecture |  |
| 2 | 2 | 2 | A1, B1, B3 | **Introduction to SQL / PL-SQL**  - SQL DML, DCL Commands  - Declaring PL/SQL Variables  -Writing Executable Statements | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises |
| 3 | 2 | 2 | A1, B1, B3, C1 | **PL/SQL Program**   * Writing Control Structures * Working with Composite   Data Types | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises |
| 4 | 2 | 2 | A1, B1, B3, C1 | **PL/SQL Program**   * Using Explicit Cursors | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises Quiz - 1 |
| 5 | 2 | 2 | A1, B1, B3, C1 | **PL/SQL Program**   * Creating Stored Procedures and Functions | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises |
| 6 | 2 | 2 | A1, B3 | **Oracle Environment**  -Exploring the Oracle  Database Architecture  - Preparing the Database  Environment  -Creating an Oracle  Database and Managing | Lecture/ Class Discussion / In-Lab Supervised Work | In-Lab  Exercises  Assignment 1 |
| 7 | 2 | 2 | A1, B1, B3, C1 | **Oracle Environment**  -Configuring the Oracle  Network Environment  -Managing Database Storage  Structures | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab Exercises |
| 8 | 2 | 2 | A1, B1, B3, C1, D1, D3 | **Oracle Environment**  -Administering User Security  -Managing Data and  Concurrency | Lecture/ Class  Discussion/ In-Lab Supervised Work  In-Lab  Supervised  Work | In-Lab Exercises |
| 9 | 2 | 2 | A1, B1, B3, C1, D1, D3 | **Oracle Environment**   * Managing Undo Data * Implementing Oracle Database Security | Lecture/ Class Discussion/ In-Lab Supervised Work | In-Lab  Exercises |

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| 10 | 2 | 2 | A1, B1, B3, C1 | **Database Maintenance** | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises |
| 11 | 2 | 2 | A1, B1, B3, C1 | **Performance Management** | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab Exercises/ Lab Test |
| 12 | 2 | 2 | A1, B1, B3, C1 | **Intelligent Infrastructure**  **Enhancements** | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab Exercises/ Quiz 2 |
| 13 | 2 | 2 | A1, B1, B3, C1, D1, D3 | **Backup and Recovery**  **Concepts** | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab Exercises/ Assignment 2 |
| 14 | 2 | 2 | B1, B3, C1 | • **Performing Database Backups**  • **Performing Database Recovery** | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises |
| 15 | 2 | 2 | A1, B1, B3, C1 | • **Moving Data**  • **Working With Support** | Lecture/ Class  Discussion/ In-Lab Supervised Work | In-Lab  Exercises |
| 16 | 2 | - | A1, B1, C1 | All Topics |  | Final Exam |

**TEACHING MATERIALS:**

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| **Textbook(s):** | Oracle Database 11g: Administration Workshop I |
| **Handout(s):** | 1. Available on Moodle i.e. <http://www.ahlia.edu.bh/moodle> 2. Oracle Learning Library available through: <http://www.oracle.com/technetwork/tutorials/index.html> |
| **Reference(s):** | 1. Waston J., OCA Oracle Database 11g Administration I  2. Thomas B., OCA: Oracle Database 11g Administrator Certified Associate Study Guide |

**ASSESSMENTS:**

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| **Type of**  **Assessment** | **Description** | **ILOs** | **Weighting** |
| Assignments | The students will be given 2 research based  assignments each worth 10 marks and their total will be considered at the end. | A1, B1, C1, D1, D3 | 20% |
| Quizzes | The purpose of the quiz is to assess the  students’ knowledge and understanding of the topics covered in the course like creating and managing Oracle database, configuring Oracle network environment, performing database backup and recovery, implementing database security. Students will be given two quizzes, each one is 30 minutes, and the best one will be considered. | A1, B1, C1 | 10% |
| Lab Test | The knowledge and practical skills of students  will be evaluated throughout practical test that will be of 90 minutes. It will cover topics  discussed in the first 10 weeks. | B1, B3, C1 | 30% |
| Final Exam | The final exam is comprehensive and will be of two hours duration. It will consist of  multiple choice questions, fill in the blank, short-answer and few essay questions. | A1, B1, C1 | 40% |
| In-Lab Exercises | Each of the In-Lab exercises consists of a set of practical tasks to be carried by the  students during lab time and that will help in evaluating hands-on capability of the students. | B1, B3, C1 | Formative |
| **Overall** |  |  | **100%** |

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

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