

**COLLEGE OF INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**COURSE SYLLABUS/SPECIFICATION**

**CODE & TITLE: ITCS 333 – Introduction to SQL (ODBA – 1) WEIGHT: (2 - 2 - 3)**

**PREREQUISITE: ITCS 323**

**DESCRIPTION:** This course provides students with extensive knowledge and key skills needed to understand, manage, maintain and query Oracle database. This covers working with different data types, different functions, different queries and linking the DB to an interface designed using a programming language.

**OBJECTIVES:** 1. To understand concept of SQL (Structured Query Language) and thus; be competent in basic SQL and familiar with the usage of advanced SQL queries.

2. To produce database reports through SQL statements.

3. To solve SQL problems.

4. To excel in using Data Manipulation Language to manage data.

**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: Recognize essential concepts and principles related to creating, querying and managing both Database and Database Management System. |
| **A2** | Contemporary Trends, Problems and Research: NA |
| **A3** | Professional Responsibility: NA |

|  |  |
| --- | --- |
| **B. Subject-Specific Skills** | |
| **B1** | Problem Solving: Identify real life information management problems and solve them by  writing appropriate queries and generating appropriate reports. |
| **B2** | Modeling and Design: NA |
| **B3** | Application of Methods and Tools: Apply modern Database Management Systems such as  Oracle while solving information management problems. |

|  |  |
| --- | --- |
| **C. Thinking Skills** | |
| **C1** | Analytic: Critically analyze real world problems and user requirements in order to choose the appropriate queries for solving and managing such problems. |
| **C2** | Synthetic: NA |
| **C3** | Creative: NA |

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| --- | --- |
| **D. General and Transferable Skills (Other Skills Relevant to Employability and Personal**  **Development)** | |
| **D1** | Communication: The ability to express and communicate ideas in oral and written form. |
| **D2** | Teamwork and Leadership: NA |
| **D3** | Organizational and DevelopmentalSkills: Demonstrate ability to organize ideas and  effectively allocate time in given assignment or project. |
| **D4** | Ethical and Social Responsibility: NA |

**Week**

**Hours**

**Lec. Lab**

**Course Structures (Outline)**

**ILOs Unit/Module or Topic Title**

**Teaching**

**Method**

**Assessment**

**Method**

Introduction and syllabus

1 2 2 A1

distribution. Lecture

2 2 2 A1, B3

3 2 2 A1, B3

A1, B1,

**SQL - DML:**

- Retrieving Data Using the

SQL SELECT Statement

- Restricting and Sorting Data

**SQL - DML:**

- Using Single-RowFunctions to Customize Output.

- Using Conversion Functions and Conditional Expressions.

**SQL - DML:**

Lecture/ In- Lab Supervised Work

Lecture/ In- Lab Supervised Work

Lecture/ In-

In-Lab

Exercises

In-Lab

Exercises

In-Lab

4 2 2

5 2 2

6 2 2

7 2 2

B3, C1, D3

A1, B1, B3, C1

A1, B1, B3, C1

A1, B1, B3, C1

Reporting Aggregated Data using the Group Functions.

**SQL - DML:**

Displaying Data from Multiple

Tables.

**SQL - DML:**

Using Subqueries to Solve

Queries.

**SQL- DML:**

- Using the Set Operators.

- Manipulating Data.

**SQL- DDL:**

- Using DDL Statementsto

Lab

Supervised Work Lecture/ In- Lab Supervised Work Lecture/ In- Lab Supervised Work Lecture/ In- Lab Supervised Work

Lecture/ In-

Exercises/ Assignment 1

In-Lab

Exercises

In-Lab

Exercises

In-Lab

Exercises

8 2 2 A1, B1, B3, C1

9 2 2 A1, B1, B3, C1

A1, B1,

Create and Manage Tables.

- Creating Other Schema

Objects.

**SQL- DML:**

Searching Data Using

Advanced Sub queries

Lab

Supervised

Work

Lecture/ In- Lab Supervised Work Lecture/ In-

In-Lab

Exercises

Lab Test 1

In-Lab

10 2 2

B3, C1, D3

**SQL- DML:**

Manipulating Large Data Sets.

Lab

Supervised

Work

Exercises/ Assignment 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 11 | 2 | 2 | A1, B1, B3, C1 | **SQL- DCL:**  Controlling User Access. | Lecture/ In-  Lab Supervised Work | In-Lab  Exercises |
| 12 | 2 | 2 | A1, B1, B3, C1 | **SQL- DML:**  - Hierarchical Retrieval.  - Regular Expression Support. | Lecture/ In-  Lab Supervised Work | In-Lab  Exercises |
| 13-14 | 4 | 4 | A1, B1, B3 | **Integrating Oracle DB with an interface.** | Lecture/ In-  Lab Supervised Work | Lab Test 2/ In- Lab Exercises |
| 15 | 2 | 2 | B1, B3, C1, D1, D3 | **Student Projects** | Project  Supervision | Evaluation of  Project Presentation and Report |
| 16 | 2 | - | A1,  B1,C1 | All Topics |  | Final Exam |

**TEACHING MATERIALS:**

|  |  |
| --- | --- |
| **TEXTBOOK(S):** | Oracle Database 11g: SQL Fundamentals I |
| **HANDOUT(S):** | Oracle Learning Library available through:  <http://www.oracle.com/technetwork/tutorials/index.html> |
| **REFERENCE(S):**  **WEBSITE(S):** | 1. Gehani N. and Annamalai M.(2013) *The Database Book – Principles and*  *Practice using the Oracle Database System,* Universities Press.  2. Greenwald R., Stackowiak R. and Sterns J. (2007) *Oracle Essentials: Oracle*  *Database 11g,* Fourth Edition, O’Reilly Media.  [http://www.oracle.com](http://www.oracle.com/) |

**ASSESSMENTS:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of**  **Assessment** | **Description** | **ILOs** | **Weighting** |
| Assignments | Two assignments to be given to students, each  assignment worth five marks. The assignments contain several questions designed to help students consolidate the concepts learned as well as assess students’ skills in writing SQL queries to create or manipulate oracle DB.  The average of these assignments will give five marks. | A1, B1, B3, C1, D3 | 5% |
| Project | A practical project that will assess the student  knowledge and skills in consuming Oracle DB | B1, B3, C1,  D1, D3 | 15% |

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|  | from other applications. The student will be  required to develop a full project that integrates Oracle DB with another programming language. |  |  |
| Lab Tests | Two practical tests to be given to students  during lab time where each will take two hours and worth 20 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 | 40% |
| Final Exam | The final exam is a comprehensive, written  exam and will be of 2 hours. It will assess students’ knowledge and skills in writing appropriate SQL queries to solve particular problems. The exam consists of several types of questions such as: multiple choice questions, case studies and queries. | A1, B1,C1 | 40% |
| In-Lab Exercises | In-Lab Exercises will allow the students to  practice database operations on actual database management system. They will cover writing appropriate queries for data manipulation and management. | B1, B3 | Formative |
| **Overall** |  |  | **100%** |

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