1.	**Name of Course/Module: RDBMS with SQL**						
2.	**Course Code:** BIT 245						
3.	**Name(s) of academic staff:**						
4.	**Rationale for the inclusion of the course/module in the programme :** The course is essential to understand a relational database management system (RDBMS) and database management system (DBMS) that is based on the relational model.						
5.	**Semester and Year offered:** Year 2 Semester 4						
6.	**Course Hours**	Face To Face				ILT	TSLT
		L	T	P	O		
	L=Lecture T=Tutorial P=Practical O=Others TSLT=Total Student Learning Time	55	3	20	6	78	162
7.	**Credit Value:** 4						
8.	**Prerequisite:** Nil						
9.	**Learning Outcomes:** On the completion of this module, students should be able to: **Cognitive:** - Explain the concepts of relational database management system (RDBMS),particularly: - What an RDBMS is, and how it differs from older flat file systems. **Psychomotor:** - The importance of the data model, its building blocks, and how it relates to business rules. - How data is organized through the use of integrity rules and primary and foreign keys **Affective:** - The importance of relational set operators, the data dictionary, and indexes. - Explain the fundamental differences between logical and physical database design.						
10.	**Transferable Skills:** - Problem Solving - Thinking logically within constraints - Ability to plan and organize theoretical learning as well as applied learning - Evaluating results						
11.	**Teaching-learning and assessment strategy** - Lectures - Tutorials At the end of the programme, students are given an opportunity to evaluate the course and the lecturer						
12.	**Synopsis:** This course is an introductory application-oriented course covers the relational database systems RDBS – the predominant system for business, scientific and engineering applications at present.						
13.	**Mode of Delivery:** Lectures, Practical.						
14	**Content outline of the course/module and the SLT per topic**						

No.	Subject Description	Face-to-face				ILT	Total
		Lecture	Tutorial	Practical	Others		

1.	**Introduction:**
	• The SQL Language
	• The Role of SQL
	• SQL Success Factors
	   o Official SQL Standards
	   o Microsoft Support
	   o Relational Foundation
	   o Complete Database Language
	   o Client/ Server Architecture
	   o Retrieving Data
	   o Creating a Database
		6	3	-	-	9	18

2.	**Relational databases:**
	• Early Data Models
	   o File Management Systems
	   o Hierarchical Databases
	   o Network Databases
	• The Relational Data Model
	   o The Sample Database
	   o Tables
	   o Primary Keys
	   o Relationships
	   o Foreign Keys
	• Codd's 12 Rules for Relational Databases
		6	-	3	-	9	18

3.	**Retrieving data:**						
	- SQL Basics - Name: - Table Names - Column Names - Data Types - Constants - Simple Queries - The SELECT Statement - The SELECT Clause - The FROM Clause - Multitable Queries (Joins) - Duplicate Rows - Row Selection - Search Conditions - The Comparison Test (=, <,>, <=, >=) - The Range Test (BETWEEN) - The Set Membership Test (IN) - The Pattern Matching Test (LIKE) - The Null Value Test (IS NULL) - Compound Search Conditions (AND, OR and NOT) - Sorting Query Results (ORDER BY Clause)	10	-	4	-	14	28

4.	**Relational algebra – the foundation:** • Introduction • Operators: Select, Project, Rename, Union, Intersection, Minus, Cartesian Product, Theta Join, Equijoin, Natural Join, Division • Relations and Predicates • Relational Operators and Logical Operators • JOIN and AND • RENAME • Projection, Restriction and AND • Extension and AND • UNION and OR • Database Updates • Data Integrity • Transaction Processing	8	-	4	-	12	24
5.	**Database design i: projection – join normalization:** • Introduction • Creating a Database • SQL Security • Avoiding Redundancy • Join Dependency • Normalization upto BCNF • The role of FDs and Keys in Optimization • Boyce – Codd Normal Form (BCNF) • Surrogate Keys • Entity Relationship (ER) Modelling • What is Type?	8	-	3	-	11	22

#	Topic						
6.	**Data models:** • The Entity Relationship Model • Advantages and Disadvantages of E-R Data Model	5	-	2	-	7	14

7.	**SQL today and tomorrow:**
	 • Database Processing and Stored Procedural SQL
	 • SQL and Data Warehousing
	 • SQL and Application Servers
	 • SQL and XML
	 • Database Market Trends
	    o Enterprise Database Market maturity
	    o Software-as-a-Service (SaaS)
	    o Database Server Appliances
	    o SQL Standardization
	 • SQL in Next Decade
	    o Distributed Databases
	    o Massive Data Warehousing for Business Optimization
	    o Embedded Databases
	    o Cloud Based and Horizontally Scalable Databases
		12	-	4	-	16	32

	Total	55	3	20	-	78	156

15.	**Main references supporting the course:**
	   a. An_Introduction_to_Relational_Database_Theory_Hugh Darwen
	   b. Mcgraw hill sql the complete reference 3rd edition 10 2009
	   c. MySQL Cookbook, 3rd Edition