Programme code:	MCA	**Programme Title :**	Master of Computer Applications	
Course Code:	**19PMC209**	**Title**	**Batch :**	2019
		Relational Database Management System	**Semester**	I
Hrs/Week:	4		**Credits:**	04

Course Objective

- Understand fundamental database concepts and the different database systems.
- Understand methodologies to conceptualize and design database systems.
- Identify the key issues in developing database systems and applications.
- Develop applications involving database systems, in particular Web-based applications, and commercial RDBMS such as MySQL, Oracle, SQL Server and Access.

Course Outcomes (CO)

K1	CO1	To remember the fundamentals of data models to conceptualize and depict a database system
K2	CO2	To understand the relational database implementation using SQL with relational database design concepts.
K3	CO3	To apply the internal storage structures using different file and indexing techniques
K4	CO4	To Analyze the database design procedure for large enterprise database design

Existing Syllabus

Unit-1

Overview of database systems: Managing data – A historical perspective file systems versus a DBMS – Advantages of a DBMS – Describing and storing data in a DBMS – Queries in a

DBMS – Transaction management – Structure of a DBMS.

Database design & ER diagrams – Entities attributes and entity sets – Relationships and Relationship sets – Additional features of the ER model – conceptual database design with the ER model.

Unit-2

Relational Model: Integrity constrains over relations – Enforcing integrity constraints – Querying relational data – Logical database design; ER to relational introduction to views – Destroying / Altering Tables & Views.

Relational algebra and calculus: Relational Algebra – Relational Calculus.

Unit-3

SQL: **Queries, Programming Triggers**: The form of a basic SQL Query – UNION, INTERSECT and EXCEPT – Nested Queries – Aggregate operators – Null values – Complex integrity constraints in SQL – Triggers & Active data bases.

Transaction Management Overview: The ACID properties – Transactions & Schedules – Concurrent execution of transactions – Lock-based concurrency control – performance of locking – Transaction support in SQL.

Unit-4

Schema Refinement and normal forms: Introduction to schema refinement – Functional dependencies – Reasoning about functional dependencies – Normal forms – Properties of Decompositions – Normalization – Schema refinement in data base design – Other kinds of dependencies.

Security: Introduction to database security – Access control – Discretionary access control – Mandatory access control – Additional issues to security.

Concurrency control: 2PL, serializability and Recoverability – Introduction to lock Management – Lock conversions – Specialized Locking techniques- Concurrency control without locking.

Unit-5

Parallel & Distributed databases: Introduction – Architecture for parallel databases – Parallel Query evaluation – Parallel zing individual operations – Parallel query optimization – Introduction to distributed databases – Distributed DBMS architecture sorting data in a

distributed DBMS. **Object Database Systems**: Motivation Example – Structured data types – Operation on structured data types – Encapsulation & ADTS – Inheritance – Objects, OIDS and reference Types – Database design for and ORDBMS – OODBMS – comparing RDBMS OODBMS and ORDBMS.

Books for Study:

- Raghu Ramakrishnan, Johannes Gehrke (2002), "*Database Management Systems*", Third edition, McGraw-Hill Higher Education.

Books for Reference:

- Silberschatry, Korth, Sundarshan (2010), "*Database System Concepts*", Sixth Edition, McGraw-Hill Higher Education.
- Elmasti Navathe, (2007), "*Fundamentals of Database Systems*", Fifth Edition, Pearson Education Asia.

Mapping

PSO / CO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	M	S	M	M	S
CO2	S	M	H	S	H
CO3	M	L	S	M	S
CO4	M	H	H	L	H

S- Strong; H-High; M-Medium; L-Low

Programme code:	MCA	**Programme Title :**	MCA	
Course Code:	**18PMC533**	**Title**	**Batch :**	2018
		Data Mining	**Semester**	V
Hrs/Week:	4		**Credits:**	4

Course Objective

- To understand the concept of data mining and big data.
- To understand association rules, classification and prediction and clustering
- To learn data mining and big data environments

Course Outcomes (CO)

K1	CO1	To remember and recollect the concept of Data base
K2	CO2	To get the idea of data mining and big data
K3	CO3	To apply the concept in the real world problems
K4	CO4	To analyze the results with practical problems

Existing Syllabus

Unit-1

Introduction – Data Mining – Need of Data Mining – Kinds of data – Data mining Functionalities – Interesting patterns – classification of data mining systems.

Unit-2

Mining Frequent Patterns, Associations and Correlations: Basic concepts and a Road Map – Apriori Algorithm – Generating Association rules from frequent item set.

Classification and Prediction - Definition - Issues regarding classification and Prediction - Decision Tree Induction – Rule Based Classification

Unit-3

Cluster Analysis – Types of Data – categorization of major clustering methods – Partitioning Methods: K-Means and K-Mediods – CLARANS – Hierarchical Methods : Agglomerative and Divisive – BIRCH – ROCK - CHAMELEON

Unit-4

Fundamentals of Big Data: Evolution of Data Management-Managing the data – Big Data - **Big Data Types**: Structured data – Unstructured Data

Big Data Technology Components: Big Data Stack – Redundant Physical Infrastructure – Security Infrastructure – Operational Databases – Organizing Data Services and Tools – Analytical Data Warehouses – Big Data Analytics – Big Data Applications.

Unit-5

Operational Database: Relational, Non-relational, Key-value Pair, Document, Columnar, Graph, Spatial, polygot Persistence.

Introducing R- Understanding features of R – Studying the popularity of R – Introducing Big Data – Getting information about popular organizations that hold big data – Introducing Hadoop – Exploring Hadoop features – Studying Hadoop Components – Reason for using R and Hadoop together

Power point Presentations, Group discussions, Seminar ,Quiz, Assignment

Books for Study:

1. Jiawei Han and Micheline Kamber (2008) "*Data Mining Concepts and Techniques"*Second Edition, Elsevier, Reprinted .
2. Judith Hurwitz, Alan Nurgent, Dr. Fern Halper, Marcia Kaufman,(2013) " *Big Data for Dummies"* ,First Edition,A Wiley Publication
3. Vignesh Prajapathi, Big Data Analytics with R and Hadoop, PACKT Publishing, 2013.

Books for Reference:

- Margaret H. Dunham (2003), "*Data mining introductory and advanced topics*", Pearson education,.
- ArunK.Pujari (2003), *" Data Mining Techniques*", Universities Press (India) Pvt. Ltd.,.
- Michael Minelli, Michele Chambers, Ambiga Dhiraj,(2013) "*Big Data, Big Analytics – Emerging Business Intelligence and Analytic Trends For Todays Businesses*", First Edition,A Wiley Publication,

Mapping

PSO / CO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	H	H	H	H	S
CO2	H	M	M	S	H
CO3	H	H	M	M	M
CO4	M	H	H	H	M

S-Strong; H-High; M-Medium; L-Low

Programme code:	MCA	**Programme Title :**	Master of Computer Applications	
Course Code:	**19PMC535**	**Title**	**Batch :**	2019
		Elective III: Python programming	**Semester**	V
Hrs/Week:	4		**Credits:**	4

Course Objective

- To enable the students to understand the core principles of the Python Language.
- To use the tools to produce well designed programs in python.
- To create effective GUI applications.

Course Outcomes (CO)

K1	CO1	To remember the principles of structured programming Recognize and construct common programming idioms: variables, loop, branch, subroutine, and input/output.
K2	CO2	To understand the common programming idioms: variables, loop, branch, subroutine, and input/output
K3	CO3	To deploy the concepts of lists, tuples, dictionaries, standard libraries, modular programming and the design of user interfaces
K4	CO4	To figure out ability to analyze and solve the problems using advanced facilities of the Python language

Syllabus

Unit – I	introduction: Introduction to Python- an interpreted high level language- interactive mode and script mode. Variables- Expressions and Statements: Values- Variables and keywords; Operators and Operands in Python: (Arithmetic - relational and logical operators)- operator precedence- Expressions and Statements(Assignment statement); Taking input (using rawinput() and input()) and displaying output(print statement);Putting Comments.	**12 Hours**

Unit II	Built in Functions: Importing Modules (entire module or selected objects) – invoking built- in functions - functions from math module (ceil, floor, fabs, exp, log, log10, pow, sqrt, cos, sin, tan, degrees, radians) - using random() and randint() functions of random module to generate random numbers- composition. Defining functions- invoking functions- passing parameters (default parameter values- keyword arguments).	**10 Hours**
Unit III	Variables: Scope of variables- void functions and functions returning values- flow of execution Conditional constructs and looping: if.. else statement -While- For (range function)- break- continue- - pass- Nested loops- use of compound expression in conditional constructs. Strings: Creating- initializing and accessing the elements- String operators: +, *, in, not in, range slice[n:m] Comparing strings using relational operators. String functions & methods: len- capitalize- find- isalnum- isalpha- isdigit- lower- islower- isupper- upper-lstrip- rstrip- isspace- istitile- partition- replace- join- split- count- decode- encode-swapcase- PatternMatching.	**10 Hours**
UNIT IV	List functions & methods: Concept of mutable lists- creating- initializing and accessing the elements- traversing- appending- updating and deleting elements - List operations (joining- list slices)- len- insert- append- extend- sort- remove- reverse- pop. Dictionaries: Concept of key-value pair- creating- initializing and accessing the elements in a dictionary- traversing- appending- updating and deleting elements. Dictionary functions & Methods: cmp- len- clear()- get()- has_key()- items()- keys()- update()- values(). Tuples: Immutable concept - creating - intialising and accessing the elements in a tuple. Tuple functions: cmp()- len()- max()- min()-tuple().	**10 Hours**
UNIT-V	Modules: Modules-Standard Modules – sys- time- dir functions. Exceptions- Errors- Run Time Errors- The Exception Model- Exception Hierarchy- Handling Multiple Exceptions- raise - assert- Writing Your Own Exception Classes. GUI: Introduction- Components and Events- An Example GUI- The root Component- Adding a Button- Entry Widgets- Text Widgets- Checkbuttons- Radiobuttons- Listboxes- Frames- Menus- Binding Events to Widgets.	**10 Hours**

Power point Presentations, Group discussions, Seminar ,Quiz, Assignment, Experience Discussion, Brain storming, Activity, Case study

Books for Study:

1. Mark Lutz "Learning Python", 5th Edition, 2013 (UNIT I -V).
2. Welsey J. Chun, "Core Phython Programming", Prentice Hall, 2001 (UNIT I -IV).

Books for Reference:

Guido van Rossum and Fred L. Drake- Jr, "An Introduction to Python " Foundation, November 2006.

Mapping

PSO / CO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	H	S	M	H	S
CO2	H	M	H	S	H
CO3	M	S	S	M	M
CO4	M	H	H	L	H

S-Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HoD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Dr. S. Niraimathi Signature:	M.Rajasenathipathi Signature:	Dr. M. Durairaju Signature:	Dr. R. Muthukumaran Signature: