GANPAT UNIVERSITY								
FACULTY OF MANAGEMENT STUDIES								
Programme		MBA		Branch/Spec.	Business Analytics			
Semester		II			Version		1.0.0.0	
Effective from Academic Year				2020-21	Effective for the batch Admitted in			June 2020
Subject code		IIA08DMS		Subject Name	DATA BASE MANAAGEMENT SYSTEMS			
Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total			
	L	TU	P	TW			CE	SEE	Total

	L	TU	P	TW	Total		CE	SEE	Total
Credit	4	0	0		4	Theory	60	40	100
Hours	4	0	0		4	Practical			

Objective: This course attempts to introduce the students to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.

Course Outcome:
Upon successful completion of this course, students should be able to:
CO-1: Describe the fundamental elements of relational database management systems
CO-2: Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
CO-3: Design ER-models to represent simple database application scenarios
CO-4: Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
CO-5: Improve the database design by normalization.
CO-6: Security and storage of Data in the system
CO-7: Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing

Theory syllabus

Unit	Content	Hrs
1	Introductory concepts of DBMS and Modelling : Introduction and applications of DBMS, Purpose of data base, Data, Independence, Database System architecture- levels, Mappings, Database, users and DBA Relational Model : Structure of relational databases, Domains, Relations, Relational algebra – fundamental operators and syntax, relational algebra queries, tuple relational calculus Entity-Relationship modelling and Enhanced-Entity Relationship Modelling : Basic concepts, Design process, constraints, Keys, Design issues, E-R diagrams, weak entity sets, extended E-R features – generalization, specialization, aggregation, reduction to E-R database schemes	10
2	Relational Database design : Functional Dependency – definition, trivial and non-trivial FD, closure of FD set, closure of attributes, irreducible set of FD, Normalization – 1Nf, 2NF, 3NF, Decomposition using FD- dependency preservation, BCNF, Multi- valued dependency, 4NF, Join dependency and 5NF	10
3	Query Processing & Query Optimization : Overview, measures of query cost, selection operation, sorting, join, evaluation of expressions, transformation of relational expressions, estimating statistics of expression results, evaluation plans, materialized views	5
4	Transaction Management :Transaction concepts, properties of transactions, serializability of transactions, testing for serializability, System recovery, Two- Phase Commit protocol, Recovery and Atomicity, Log-based recovery, concurrent executions of transactions and related problems, Locking mechanism, solution to concurrency related problems, deadlock, , two-phase locking protocol, Isolation, Intent locking	10

Note: Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme,Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision) L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work CE= Continuous Evaluation, SEE= Semester End Examination

5	Data Security, Storage and indexing:	10
	Introduction, Discretionary access control, Mandatory Access Control, Data Encryption	
	Single level and multi level indexing, Dynamic Multi level indexing using B Trees and B+ Trees, Query processing and Query Optimization, Introduction to database security.	
6	SQL Concepts :	15
	Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator,	
	Functions - aggregate functions, Built-in functions –numeric, date, string functions, set operations, sub-queries, correlated sub-queries, Use of group by, having, order by, join and its types, Exist, Any, All , view and its types. transaction control commands – Commit, Rollback, Save point	
	PL/SQL Concepts :	
	Cursors, Stored Procedures, Stored Function, Database Triggers	

Reference Books	
1	An introduction to Database Systems by C J Date, Addition-Wesley Publications
2	Database System Concepts by Abraham Silberschatz, Henry F. Korth& S. Sudarshan, McGrew Hill Publication
3	Understanding SQL by Martin Gruber, BPB Publications
4	Database Management Systems (3/e), by Raghu Ramakrishnan and Johannes Gehrke, McGraw Hill, 2003.
5	Database Systesm- Design, Implementation and Management (7/e), by Peter Rob and Carlos Coronel, Cengage Learning, 2007.

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