MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department	:	Information and Communication Technology
Course Name & code	:	DATABASE SYSTEMS & ICT 2271
Semester & branch	:	IV SEMESTER & CCE (B.TECH)
Name of the faculty	:	Ms. Diana Olivia & Dr. Sumith N

No of contact hours/week:

L	T	P	C
3	0	0	3

Course Outcomes (COs)

	At the end of this course, the student should be able to:	No. of Contact Hours	Marks
CO1:	Understand the database concepts	2	6
CO2:	Apply procedural and non-procedural language constructs to manage database system	13	36
CO3:	Design database using data modelling tool and normalization concepts	11	30
CO4:	Describe transaction management and concurrency control concepts.	7	20
CO5:	Interpret the unstructured databases	3	8
	Total	36	100

Assessment Plan

Components	Assignments	Sessional Tests	End Semester/ Make-up Examination
Duration	20 to 30 minutes	60 minutes	180 minutes
Weightage	20 % (4 X 5 marks)	30 % (2 X 15 Marks)	50 % (1 X 50 Marks)
Typology of Questions	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation	Knowledge/ Recall; Understanding/ Comprehension; Application	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation
Pattern	Answer one randomly selected question from the problem sheet (Students can refer their class notes)	MCQ: 10 questions (0.5 marks) Short Answers: 5 questions (2 marks)	Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks
Schedule	4, 7, 10, and 13th week of academic calendar	Calendared activity	Calendared activity
Topics Covered	Quiz 1 (L 1-8 & T_{y1-y2}) (CO1,2,3)	Test 1 (L 1-14 & T_{b1-b2}) (CO1,2,4)	Comprehensive examination covering full syllabus. Students are expected to answer all questions (CO1-5)
	Quiz 2 (L **9-15** & T_{y3-y4}) (CO2,3)		
	Quiz 3 (L 16-24 & T_{y5-y6}) (CO2,3)	Test 2 (L 15-30 & T_{b3-b4}) (CO2,3,5)	
	Quiz 4 (L 25-32 & T_{y7-y8}) (CO2,3,4)		

Lesson Plan

L. No./ T. No.	Topics	Course Outcome Addressed
L0	Introduction to the course	CO
L1	Introduction, Characteristics of the database approach, actors on the scene	CO1
L2	Advantages of using a DBMS.	CO1
L3	Relational Databases: Structure of Relational Database, Database schema, Keys	CO2
L4	Schema Diagrams	CO2
L5	Relational Query Languages, Relational Operations	CO2
L6	Introduction to SQL: Overview of the SQL Query Language, SQL data definition, Basic structure of SQL Queries	CO2
L7	Additional basic operations	CO2
L8	Set operations	CO2
L9	Null values, Aggregate functions	CO2
L10	Nested sub-queries	CO2
L11	Modification of the Database	CO2

References:

1. Abraham Silberschatz, Henry Korth F., Sudarshan S., Database system concepts (6e), McGraw-Hill, 2013
2. Elmasri, Ramez, Sham Navathe, Fundamentals of database systems (7e), Pearson, 2016
3. Molina, Hector, Jeffrey Ullman D., Jennifer Widom, Database systems, The Complete Book (2e), Pearson Prentice Hall, 2013
4. Chodorow Kristina, MongoDB: The definitive guide (2e), O'Reilly, 2013.
5. Click or tap here to enter text.
6. Click or tap here to enter text.
7. Click or tap here to enter text.

Submitted by: Ms. Diana Olivia & Dr. Sumith N

(Signature of the faculty)

Date: 06-01- 2020

Approved by: Dr. Balachandra

(Signature of HOD)

Dr. Balachandra
Professor & Head
Dept. of Information & Communication Technology
M.I.T., Manipal - 576 104

Date: 07-01-2020

FACULTY MEMBERS TEACHING THE COURSE (IF MULTIPLE SECTIONS EXIST):

FACULTY	SECTION	FACULTY	SECTION
Ms. Diana Olivia	A		
Ms. Sumith N	B		

L12	Intermediate SQL: Join expressions, Transactions, Views	CO2
L13	Integrity Constraints, SQL Data Types	CO2
L14	schemas, Authorization	CO2
L15	Advanced SQL: Accessing SQL from a programming language, Functions and Procedures	CO2
L16	Functions and procedures, Triggers, Recursive queries	CO2
L17	Database Design and ER model: Overview of the design process, The Entity Relationship model	CO3
L18	Constraints, Removing redundant attributes in the entity sets	CO3
L19	Entity relationship diagrams, Reduction of ER to relations	CO3
L20	ER design issues, Extended ER features	CO3
L21	Relational database design: Features of good relational design	CO3
L22	Atomic domains and first normal form (NF)	CO3
L23	Decomposition using functional dependencies	CO3
L24	Functional dependency theory	CO3
L25	2NF, 3NF and BCNF	CO3
L26	Algorithms for decomposition.	CO3
L27	Decomposition using multivalued dependencies	CO3
L28	Transaction Management: Transaction concept, A simple transaction model, Storage structure	CO4
L29	Transaction Atomicity and durability, Transaction isolation	CO4
L30	Serializability, Transaction isolation and atomicity	CO4
L31	Transaction isolation levels, Implementation of isolation levels, Transactions as SQL statements	CO4
L32	Concurrency Control: Lock Based protocols, deadlock handling	CO4
L33	Multiple granularity, Timestamp based protocols, Validation based protocols	CO4
L34	Introduction to NoSQL, RDBMS vs NoSQL	CO5
L35	CAP Theorem, Types of NoSQL database	CO5
L36	Basics of MongoDB.	CO5