

**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI, K. K. BIRLA GOA CAMPUS**  
**II SEMESTER 2019-2020**  
**COURSE HANDOUT (PART II)**

**Date: 06/01/2020**

In addition to Part I (General Handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

**Course No.** : CS F212  
**Course Title** : DATABASE SYSTEMS  
**Instructor-in-charge** : Dr. Shubhangi K. Gawali  
[shubhangi@goa.bits-pilani.ac.in](mailto:shubhangi@goa.bits-pilani.ac.in), Chamber No. D-623  
**Lab Instructor** : Dr. Sujith Thomas  
[sujitht@goa.bits-pilani.ac.in](mailto:sujitht@goa.bits-pilani.ac.in), Chamber No. D-158

**1. Scope and Objective of the course**

The scope of the course is Database System concepts and major application areas. The objective is to understand various data models and to develop the relational model of database including the rigorous practice of query language, SQL. The emphasis is to apply the concepts to wide range of applications.

**2. Text Book:**

T1 Raghu Ramakrishnan and Johannes Gehrke, **Database Management System**, 3<sup>rd</sup> Ed, McGraw-Hill, 2002

**Reference Books:**

R1 Elmasri, Navathe, **Fundamentals of Database Systems**, Pearson Education, 2002

R2 Silberschatz A, Korth H F, and Sudarshan S, **Database System Concepts**, TMH, 2002

**3. Lecture Plan**

Lectures	Topic	Reference
1-3	Overview of Database Systems, File system versus Database System, Structure of Database System and its users, Database applications	T1: Ch 1
4-6	Introduction to database design, ER model	T1: Ch 2
7-9	Enhanced E-R model	R1: Ch 4
10-14	Relational model concepts, ER to Relational model	T1: Ch 3
15-17	The relational algebra and extended relational algebra operations, Formation of queries, Modification of the database, views.	T1: Ch 4
18-21	SQL: Queries and Constraints	T1: Ch 5
22-23	Functions, Procedures and Triggers	Class notes
24-25	Integrity and Security: Domain Constraints, Referential integrity, Triggers in SQL, Security and authorization in SQL	T1: Ch 21
26-29	Relational-Database Design: Pitfalls in relational-database design, Functional dependencies, Decomposition, normal forms, Normalization techniques.	T1: Ch 19
30-33	Transaction Management	T1: Ch 16

34-36	Concurrency Control	T1: Ch 17
37-38	Crash Recovery	T1: Ch 18
39-40	Storage and indexing	T1: Ch 8,9

#### 4. Practicals plan

Lab no	Date	Topic
1	22nd Jan	Data Definition Language commands (DDL: Create, Alter, Show, Truncate and Drop table) Data Manipulation Language commands( DML: Insert, Delete and Update) and Security Management using Data Control Language commands (DCL : Commit, Rollback and Savepoint) Importing and Exporting of Database
2	5th Feb	Data Query Language (DQL: Select) and Integrity Constraints: Domain: Not NULL and Check Entity: primary key and Unique Referential: Foreign key and On update/delete cascade
3	12th Feb	Joins (Natural join, Equijoin, Inner, Outer, Left, Right join) and Aggregate functions (Sum, Avg, Count, Min, Max)
4	19th Feb	Nested queries and set operations (in, not in, exist, not exist)
	<b>26th Feb</b>	<b>Mid-semester lab exam</b>
5	11th Mar	Group by, Having and Order by clause
6	18th Mar	Normalization, Views and Indexing
7	25th Mar	User defined functions and PL/SQL
8	1st Apr	Stored procedures and Triggers
9	8th Apr	Concurrency Control using Locks and Transaction Control Language (TCL : Grant and Revoke)
10	15th Apr	Frontend-Backend Connectivity
	<b>22nd Apr</b>	<b>Comprehensive lab exam</b>

#### 5. Evaluation Scheme:

	Theory (60%)		Practicals (40%)			
	Mid-semester	Comprehensive	Attd	Mid-semester	Comprehensive	Research contribution
<b>Date</b>	5th Mar	6th May	weekly	26th Feb	22nd Apr	as per the given schedule
<b>Time</b>	11 to 12:30 p.m.	FN	2 to 4 p.m.	during lab hours	during lab hours	
<b>Weightage (%)</b>	25	35	10	10	18	2
<b>Marks</b>	50	70	20	20	36	4
<b>Nature of Component</b>	Closed Book	Open/Closed Book	NA	Closed Book	Closed Book	-

## **6. Malpractice Regulations:**

1. Any student or team of students found involved in mal practices in any examination component will be awarded negative marks equal to the weightage of that component and previous all evaluative components will be made zero. The student(s) will be blacklisted.
2. Any student or team of students found repeatedly – more than once across all courses – involved in mal-practices will be reported to the Disciplinary Committee for further action. This will be in addition to the sanction mentioned above.
3. A mal-practice - in this context - will include but not be limited to:
  - Submitting some other student's / team's solution(s) as one's own;
  - Copying some other student's / team's data or code or other forms of a solution;
  - Seeing some other student's / team's data or code or other forms of a solution;
  - Permitting some other student / team to see or to copy or to submit one's own solution;
  - OR other equivalent forms of plagiarism wherein the student or team does not work out the solution and/or uses some other solution or part thereof (such as downloading it from the web).
4. The degree of mal-practice (the size of the solution involved or the number of students involved) will not be considered as mitigating evidence. Failure on the part of instructor(s) to detect mal-practice at or before the time of evaluation may not prevent sanctions later on.
5. The decision of punishment at course-level will be taken by Instructor-InCharge.
5. **Chamber Consultation Hour:** Thursday 11 to 12 p.m. and with prior appointments through email.
6. **Notice:** Notice concerning this course will be displayed on photon notice board.
7. **Makeup Policy:**
  - Permission of the Instructor-in-Charge is required to take a make-up
  - Make-up applications must be given to the Instructor-in-charge personally.
  - A make-up test shall be granted only in genuine cases where - in the Instructor's judgment - the student would be physically unable to appear for the test.
  - In case of an unanticipated illness preventing a student from appearing for a test, the student must present a Medical Certificate from BITS medical centre.
  - Requests for make-up for the comprehensive examination – under any circumstances – can only be made to In-charge, Instruction Division.

**Instructor-In-Charge  
CS F212**