Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2021-22

Course Handout Part II

Date: 15.01.2022

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

Course No. : CSF212
Course Title : Database Systems
Instructor-in-Charge : Dr. Lov Kumar
Instructors : Dr. Manik Gupta, Dr. Subhrakanta Panda, and Dr. D V N Siva Kumar

Scope:

The scope of this course includes- Data modeling, database design theory, data definition and manipulation languages, relational data model, relational algebra and relational calculus, SQL, functional dependencies and normalization, storage and indexing techniques, query processing and optimization, transaction management - concurrency control and crash recovery.

Course Objectives:

- To Enrich the skill and competency of students in Modeling and Design of relational Database Systems using ER modeling technique.
- To learn Formal and Commercial query languages like- Relational Algebra and SQL for Relational data.
- To Impart practical knowledge in SQL and PLSQLwith hands on experience.
- To make students Industry ready in the field of Database Systems.

Textbooks:

T1. Elmarsi R, &Navathe S B,***Fundamental of Database System,*** 7e, Pearson, 2016.

Reference books:

R1. Silberschatz, Abraham, Henry F. Korth&S.Sudarshan, Database System Concepts McGRAW-HILLS, 6th ed., 2010.

R2. Ramakrishna R. &Gehrke J, ***Database Management Systems***, 3e, Mc-Graw Hill, 2003.

Course Plan:

Lecture No.	Learning Objectives	Topics to be covered	Chapter in the Text Book
1-2	To get the context for this course and introduction to basic concepts of Database Systems	Introduction to Database System Concepts – data models ; architecture; components of DBMS.	T1-Ch.1&2 and Class Notes
3	To understand the essence of Relational data model.	Relational Data Model concepts; Constraints.	T1-Ch.5
4-11	To understand the basics of database design	Relational Database Design: Functional Dependencies and Normalization ,	T1-Ch. 14 & 15

	concepts	Decomposition rules	
12-15	To learn modeling Databases at Conceptual level	Database Design by ER-and Extended ER; Mapping from ER/EER to-Relational Schema	T1-Ch.3, 4 & 9
16-19	To understand the Formal query language operations for relational model.	Formal QLs for Relational Model; Relational Algebra; Operations; introduction to Tuple Relational Calculus(TRC).	T1-Ch.8
20-22	To understand Data storage mediums	Disk Storage	T1-Ch.16
23-30	To learn Hashing and Indexing schemes for Database Systems	Indexing- Primary; Secondary; multilevel; B+ Trees . Hashing – Static and Dynamic hashing Schemes	T1-Ch. 16 &17
31-33	To understand the Transaction Model	Transaction Processing – States; Schedules	T1- Ch.20
34-36	To understand concurrency control mechanisms	Concurrency Control Techniques – Lock-based and Timestamp based schemes	T1-Ch.21
37-39	To learn the fundamentals of Database recovery Techniques	Database Recovery Techniques- Log-based and Shadow paging schemes	T1- Ch.22
40	To learn and practice SQL query operations	SQL – DDL and DML Commands	T1-Ch.6
41	To understand Advanced SQL features	Advanced SQL- Stored Procedures; Triggers; Functions	T1-Ch.7
42		Conclusion	

Evaluation

Component	Duration	Nature of Component	Date & Time	Weightage
Mid-semester Exam	90 Mins.	Closed Book	16/03 9.00am to10.30am	25%
Quiz-1	20 Mins.	Open Book	Feb-2021	5%
Quiz-2	20 Mins.	Open Book	Apr-2021	5%
Mini-project / Home Asst. (with viva)		Open Book	Will be announced in the March 2021 and evaluation in April (tentative)	15%
Lab Exam 1	1 Hr.	Open Book	TBA	5%
Lab Exam 2	1 Hr.	Open Book	TBA	5%
Comprehensive Exam	120 min	Closed Book	19/05 FN	40%

Note: 40% of the evaluation to be completed by midsem grading.
"For Comprehensive exam and Mid-semester Test, the mode (offline/online) and the duration are subject to changes as decided by the AUGSD/Timetable division in future."

6. Make-up Policy

For genuine reasons other than medical, prior approval from the IC is mandatory. Requests coming after the test will not be honored. For make-up on medical grounds, first inform the warden about the illness and take his help for consulting the doctor, and finally Chief Hostel Warden's recommendation is a must and such students should not leave the campus during Test dates (please refer to the guidelines by ID in this regard). No make-up will be given by just producing some medical prescription. The above mentioned rules will be followed very strictly.

7. Course Notices

All notices pertaining to this course will be displayed on the CS&IS, and google classroom.

8. Chamber Consultation: To be announced.

9. **Academic Honesty and Integrity Policy**:

Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor-In-Charge
CS F212