

Database Design and Implementation

Session No#	Session mode	Session Details	Week -Day	Duration Hrs
1	EL-Async	IU1: Introduction to Database Design <ul style="list-style-type: none"> Learn database basics and types. Understand data modelling. Use design tools (e.g., ERD, MySQL). IU2: Entity-Relationship Modelling and Normalization <ul style="list-style-type: none"> Draw ER diagrams. Apply 1NF, 2NF, 3NF. Remove data redundancy. Complete MCQ	Before Sync session	2
2	FC -Sync	IU1: Introduction to Database Design Discussion on Database Design IU2: Entity-Relationship Modelling and Normalization Discussion on Entity-Relationship Modelling and Normalization Explain Assignments 1 and 2	1-1	3
3	AS -Sync	Complete below assignments and submit Assignment-1: Requirements Gathering & ER Modelling Assignment-2: Schema Design & Normalization	1-2	3
4	EL-Async	IU3: Data Manipulation and Query Optimization <ul style="list-style-type: none"> Perform CRUD operations using SQL on relational databases. Use joins, subqueries, and indexing for effective querying. Apply query optimization techniques to enhance performance. Complete MCQ	Before Sync session	2
5	FC- Sync	IU3: Data Manipulation and Query Optimization Discussion on Data Manipulation and Query Optimization Explain Assignments 3 and 4	2-3	3
6	AS- Sync	Complete below assignments and submit Assignment-3: Database Creation & Data Entry Assignment-4: Query Development & Reporting	2-4	3
7	EL-Async	IU4: Database Maintenance and Testing <ul style="list-style-type: none"> Explore NoSQL types and compare them with SQL databases. 	Before Sync session	2

		<ul style="list-style-type: none"> Implement maintenance tasks like backups and indexing. Apply data integrity checks and testing strategies. <p>IU5: Database Documentation and Collaboration</p> <ul style="list-style-type: none"> Prepare clear database documentation and data dictionaries. Manage access control, roles, and security measures. Use collaborative tools and version control in database projects. <p>Complete MCQ</p>		
8	FC-Sync	<p>IU4: Database Maintenance and Testing Discussion on Database Maintenance and Testing</p> <p>IU5: Database Documentation and Collaboration Discussion on Database Documentation and Collaboration</p> <p>Explain Assignment-5 and 6</p>	3-5	3
9	AS -Sync	<p>Complete below assignments and submit</p> <p>Assignment-5: Data Integrity, Validation & Testing</p> <p>Assignment-6: Documentation, Security & Collaboration</p>	3-6	3
10	PM-Sync	<p>Project Mentoring – Explain the project and its tasks</p> <ol style="list-style-type: none"> Develop a fully normalized relational schema (up to 3NF or BCNF) with complete ER modelling for a complex enterprise case. Implement the schema using SQL, write stored procedures and triggers, populate with realistic data, and test for query efficiency. 	4-7	3
11	PI-Async	Complete project task 1	Before Sync session	3
12	PI-Async	Complete project task 2	Before Sync session	3
13	PM-Sync	<p>Project Mentoring – Explain the project and its tasks</p> <ol style="list-style-type: none"> Conduct performance and stress testing, simulate a backup/restore process, and prepare comprehensive technical documentation and schema annotations. 	4-8	3
14	PI-Async	<p>Complete project task 3</p> <p>Prepare Project Report and submit</p>	Before Assessment	3

15	SA-Sync	Summative Assessment (Each learner)	5-9	30 min
----	---------	-------------------------------------	-----	--------

EL-E-Learning

FC-Flipped Class

AS-Assignment

PM-Project Mentoring

PI-Project Implementation

SA-Summative Assessment

Sync- Synchronous Session &

Async- Asynchronous Session