

# Database Design and Implementation

## Part Time

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

		Assignment-4: Query Development & Reporting		
8	AP-Async	Additional Practice- Complete all the pending works	Before Sync session	7
9	EL-Async	<b>IU4: Database Maintenance and Testing</b> <ul style="list-style-type: none"> <li>Explore NoSQL types and compare them with SQL databases.</li> <li>Implement maintenance tasks like backups and indexing.</li> <li>Apply data integrity checks and testing strategies.</li> </ul> <b>IU5: Database Documentation and Collaboration</b> <ul style="list-style-type: none"> <li>Prepare clear database documentation and data dictionaries.</li> <li>Manage access control, roles, and security measures.</li> <li>Use collaborative tools and version control in database projects.</li> </ul> Complete MCQ	Before Sync session	2
10	FC-Sync	<b>IU4: Database Maintenance and Testing</b> Discussion on Database Maintenance and Testing <b>IU5: Database Documentation and Collaboration</b> Discussion on Database Documentation and Collaboration  Explain Assignment-5 and 6	3-5	3
11	AS -Sync	Complete below assignments and submit Assignment-5: Data Integrity, Validation & Testing Assignment-6: Documentation, Security & Collaboration	3-6	3
12	AP-Async	Additional Practice- Complete all the pending works	Before Sync session	6
13	PM-Sync	Project Mentoring – Explain the project and its tasks <ol style="list-style-type: none"> <li>Design a normalized and scalable database architecture for a given business scenario, including entity-relationship modelling and schema generation.</li> <li>Implement the database structure using SQL, creating tables with appropriate keys, constraints, and sample data entries.</li> </ol>	4-7	3
14	PI-Async	Complete project task 1	Before Sync session	3

15	PI-Async	Complete project task 2	Before Sync session	3
16	PM-Sync	Project Mentoring – Explain the project and its tasks 3. Test and document the database, covering data validation, query performance, access controls, and schema documentation.	4-8	3
17	PI-Async	Complete project task 3 Prepare Project Report and submit	Before Assessment	3
18	SA-Sync	Summative Assessment (Each learner)	5-9	30 min

## Full Time

Session No#	Session mode	Session Details	Week -Day	Duration Hrs
1	EL-Async	<b>IU1: Introduction to Database Design</b> <ul style="list-style-type: none"> <li>Learn database basics and types.</li> <li>Understand data modelling.</li> <li>Use design tools (e.g., ERD, MySQL).</li> </ul> <b>IU2: Entity-Relationship Modelling and Normalization</b> <ul style="list-style-type: none"> <li>Draw ER diagrams.</li> <li>Apply 1NF, 2NF, 3NF.</li> <li>Remove data redundancy.</li> </ul> Complete MCQ	1-1	2
2	FC -Sync	<b>IU1: Introduction to Database Design</b> Discussion on Database Design <b>IU2: Entity-Relationship Modelling and Normalization</b> Discussion on Entity-Relationship Modelling and Normalization Explain Assignments 1 and 2	1-2	3
3	AS -Sync	Complete below assignments and submit Assignment-1: Requirements Gathering & ER Modelling Assignment-2: Schema Design & Normalization	1-2	3
4	AP-Async	Additional Practice- Complete all the pending works	1-3	7
		<b>IU3: Data Manipulation and Query Optimization</b> <ul style="list-style-type: none"> <li>Perform CRUD operations using SQL on relational databases.</li> </ul>	1-4	2

5	EL-Async	<ul style="list-style-type: none"> <li>• Use joins, subqueries, and indexing for effective querying.</li> <li>• Apply query optimization techniques to enhance performance.</li> </ul> <p>Complete MCQ</p>		
6	FC- Sync	<p><b>IU3: Data Manipulation and Query Optimization</b></p> <p>Discussion on Data Manipulation and Query Optimization</p> <p>Explain Assignments 3 and 4</p>	1-5	3
7	AS- Sync	<p>Complete below assignments and submit</p> <p>Assignment-3: Database Creation &amp; Data Entry</p> <p>Assignment-4: Query Development &amp; Reporting</p>	2-6	3
8	AP-Async	Additional Practice- Complete all the pending works	2-7	7
9	EL-Async	<p><b>IU4: Database Maintenance and Testing</b></p> <ul style="list-style-type: none"> <li>• Explore NoSQL types and compare them with SQL databases.</li> <li>• Implement maintenance tasks like backups and indexing.</li> <li>• Apply data integrity checks and testing strategies.</li> </ul> <p><b>IU5: Database Documentation and Collaboration</b></p> <ul style="list-style-type: none"> <li>• Prepare clear database documentation and data dictionaries.</li> <li>• Manage access control, roles, and security measures.</li> <li>• Use collaborative tools and version control in database projects.</li> </ul> <p>Complete MCQ</p>	2-8	2
10	FC-Sync	<p><b>IU4: Database Maintenance and Testing</b></p> <p>Discussion on Database Maintenance and Testing</p> <p><b>IU5: Database Documentation and Collaboration</b></p> <p>Discussion on Database Documentation and Collaboration</p> <p>Explain Assignment-5 and 6</p>	2-9	3
11	AS -Sync	<p>Complete below assignments and submit</p> <p>Assignment-5: Data Integrity, Validation &amp; Testing</p> <p>Assignment-6: Documentation, Security &amp; Collaboration</p>	2-10	3
12	AP-Async	Additional Practice- Complete all the pending works	3-11	6

13	PM-Sync	Project Mentoring – Explain the project and its tasks 1. Design a normalized and scalable database architecture for a given business scenario, including entity-relationship modelling and schema generation. 2. Implement the database structure using SQL, creating tables with appropriate keys, constraints, and sample data entries.	3-12	3
14	PI-Async	Complete project task 1	3-13	3
15	PI-Async	Complete project task 2	3-14	3
16	PM-Sync	Project Mentoring – Explain the project and its tasks 3. Test and document the database, covering data validation, query performance, access controls, and schema documentation.	3-15	3
17	PI-Async	Complete project task 3 Prepare Project Report and submit	4-16	3
18	SA-Sync	Summative Assessment (Each learner)	4-17	30 min

*EL-E-Learning*

*FC-Flipped Class*

*AS-Assignment*

*PM-Project Mentoring*

*PI-Project Implementation*

*AP-Additional Practice*

*SA-Summative Assessment*

*Sync- Synchronous Session*

*Async- Asynchronous Session*