Week	Topics	Reading*	Concepts	Assessments
Week 1	**Database Concepts** Data as the New Resource Types of Databases Evolution and Functions of DBMS	**Required**: Coronel Ch.1, **Recommended**: Gillenson Ch.1, Agrawal Ch.5	Basic Concepts in Data Storing & Retrieval	**Lab 1**: file structures. 3%
Week 2	**Database Design** Requirements elicitation & analysis	Required: Coronel Ch.9	The Systems Development Life Cycle (SDLC) The Database Life Cycle (DBLC)	**Lab 2**: Conceptual database design 3%
Week 3	**Data Modeling** Importance of data modeling Data models and levels of abstraction	**Required**: Coronel Ch.2, **Recommended**: Gillenson Ch.3	Data Modeling building blocks, Evolution of major data models, Emerging alternative data models	**Lab 3**: ERD &UML class diagrams 3%
Week 4	**Relational Databases and ER Models** ERD components and database design	**Required**: Coronel Ch.3 & 4, **Recommended**: Gillenson Ch.5	Logical constructs, Tables in a relational DBMS, Data redundancy, Entity relationship components	**Lab 4**: Crow's Foot ERD, business rules 3%
Week 5	**Normalization of Database Tables**	**Required**: Coronel Ch.6	Modeling of data using normal forms 1NF, 2NF, and 3NF	**Lab 5**: Relational schema, dependency diagrams 3%
Week 6	**Normalization and ER modeling**	**Required**: Coronel Ch.6	Denormalization to generate information efficiently	**Lab 6**: Decompose dependency diagrams 3%
Week 7	**Understanding Keys and Indexes**	**Required**: 3-2, 3-8, 5-3. **Recommended**: Hernandez Ch.8	Primary, unique, foreign keys Understanding referential integrity Indexes, alternate and foreign key Indexing Types of Indexes, Building indexes	**Lab 7**: Establish keys for tables in a database 3% Project 1 (Individual) 10%

	STUDY WEEK			
Week 8	**Defining the Database: SQL DDL**	**Required**: Coronel Ch.7	Relational algebra and Relational calculus, The basic commands and functions of SQL, SQL DDL	**Lab 8**: SQL DDL coding **Project 1**: SQL 3% **Midterm Test 1** 15%
Week 9	**Manipulating the Database: SQL DML**	Required: Coronel Ch.7 & 8	SQL to query a database Joining Database Tables SQL Functions	**Lab 9**: query coding & SQL Functions 3%
Week 10	**Logical Design**	**Required**: Coronel Ch.9, **Recommended**: Conte Ch.10	Map the Conceptual Model to the Logical Model, Validate the Logical Model Logical Database Design: ER to Relational	**Lab 10**: Map conceptual model to logical 3%
Week 11	**Physical Design**	**Recommended**: Gillenson Ch.5	Schema Base Tables, Internal Schema, Data Storage Organization, Integrity and Security Measures, Database design strategies	**Final Project Assigned**: DB Design & Implementation 10%
Week 12	**Database Administration**	**Required:** Coronel Ch.16, **Recommended:** Gillenson Ch.11	The database administrator's basic functions, responsibilities Database administration tools and strategies How cloud-based data services impact the DBA's role	Work on **Final Project** **Midterm Test 2** 15%
Week 13	**Database Security, Backup and Recovery**	**Required:** Mullins Ch.14 & 16 **Recommended:** Ramakrishnan Ch.21	Data security and database security Security Principles and Guideline Main Recovery Techniques Backup and Recovery Strategies	**Final Project** due

Week 14	**Final Exam Week**			**Final Exam** 20%