Syllabus - BUAN6320

Database Foundations for Business Analytics

Jindal School of Management

The University of Texas at Dallas

Dr. Gasan Elkhodari

Professor Information

Email Address: Gasan.Elkhodari@utdallas.edu

Class Location: BUAN 6320.001/ SYSM 6338.001 / JSOM 1.217

Schedule Wednesday / 4:00 pm – 7:45 pm

TA Information TBD

Course Modality and Expectations

Traditional learning mode Face-to-face	The course will be taught face-to-face. Instructor and students meet according to the schedule.
Course Platform	Blackboard
Expectations	Class Attendance is mandatory. Lectures will NOT be recorded.
Asynchronous Learning	Asynchronous learning is not available in this class. Students aquire Asysnchronous learning modality need to drop and re-enroll a different class

Course Description

BUAN 6320: Database Foundations for Business Analytics (3 semester credit hours) This course covers Structured Query Language (SQL) and NoSQL databases and focuses on understanding the differences, and to learn how to effectively query SQL and NoSQL databases. Topics include ER models, SQL, PL/SQL, query optimization, NoSQL database types, and NoSQL querying.

Course Learning Objectives:

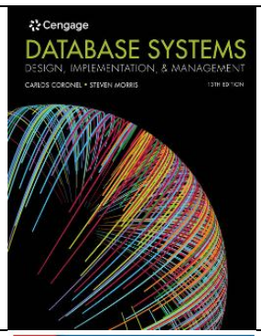
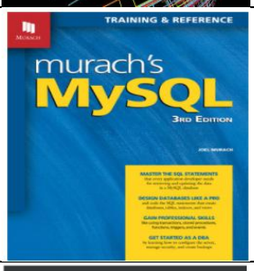
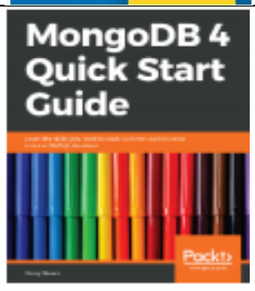
1. Create a conceptual data model when requirements are provided.
2. Convert a conceptual data model into a relational database structure.
3. Create and query relational databases using SQL.
4. Understand NoSQL database technologies and query NoSQL databases

This course includes the following learning goals:

1. Communication - You can communicate clearly in writing and speaking, meeting expectations for content, purpose, organization, audience, and format.
2. Critical Thinking and Analysis - You can apply logical processes to formulate clear, defensible ideas based on the analysis of facts and ethical considerations.
3. Quantitative Reasoning - You can use mathematical information, operations, and quantitative analyses to solve problems and inform decision-making.

4. Leadership, Facilitation, and Collaboration - You can lead, facilitate, and collaborate with individuals and teams to achieve organizational objectives.
5. Define Database - You can describe relational database characteristics, features and technology
6. Terminology - You can recognize and use relational database terminology
7. Data Integrity and Normalization - You can apply rules such as integrity and normalization constraints for the relational data model
8. Data Modeling - You can demonstrate modeling, design and development techniques
9. Physical Design - You can describe physical design
10. Relational Database - You can analyze and assess relational database designs
11. SQL - You can use structured query language (SQL) to create objects, populate tables, and retrieve data
12. Transaction Management - You can explain transaction management
13. Recovery - You can explain recovery technology
14. **Related Technology** - You can be familiar with related technology such as client-server processing, distributed databases, and data warehouses

Textbooks and Materials

Database Systems: Design, Implementation, & Management by Carlos Coronel, Steven Morris 13th Edition | Copyright 2019 DATABASE SYSTEMS: DESIGN, IMPLEMENTATION, and MANAGEMENT, 13E provides a balanced approach that makes database design and implementation accessible to students without overwhelming them.	
Murach's MySQL (3rd Edition) by Joel Murach **(Reference Only)** Published March 2019 ISBN 978-1-943872-36-7	
Book for MongoDB **(Reference Only)** Doub Bierer. MongoDB 4 Quick Start Guide. Packet Publishing, 2018. (ISBN: 978- 1-78934-353-3).	

Week	Date	Chpt	Topic	Description	Labs
1	8/27/2025	Ch. 1	Course Introduction	• Describe the characteristics of business databases and the features • Understand the importance of nonprocedural access for software productivity • Understand the impact of database management system architectures on distributed processing and software maintenance.	
2	9/3/2025	Ch. 3	Relational Data Model	• Recognize relational database terminology. • Understand the meaning of the integrity rules for relational databases.	Lab#1
3	9/10/2025	Ch. 4	Entity Relationship Modeling	• Understand important relationship patterns. • Correct notational errors in an entity relationship diagram. • Understand the representation of business rules in an entity relationship diagram.	Lab#2
4	9/17/2025	Ch. 4	Entity Relationship Modeling	Continue	Lab#3 Introduction to the Group project
5	9/24/2025	Ch. 5	Advanced Entity Relationship Modeling	• Develop ERDs that are consistent with narrative problems • Use transformations to generate alternative ERDs • Document design decisions implicit in an ERD	Lab#4
6	10/1/2025	Ch. 6	Normalization of Database Tables	•Explain Normalization and its role in the database design process. •Identify and describe each of the normal forms 1NF, 2NF, 3NF. •Apply Normalization rules to evaluate and correct structures.	Lab#5
7	10/8/2025	Ch. 7	Query Formulation with SQL	- Use the critical questions to transform a problem statement into a database representation Write SELECT statements for more difficult queries involving joins of three or more tables, self joins, joins with grouping - Write SELECT statements for more difficult queries involving joins of three or more tables, self joins, joins with grouping. - Write brief descriptions to document SQL SELECT statements. - Write INSERT, UPDATE, and DELETE statements to change the rows of a table	Lab#6
8	10/15/2025	Ch. 8	Advanced Query Formulation with SQL	-Recognize problems involving the outer join, difference, and division operators. -Adapt example SQL statements to matching problems involving the outer join, difference, and division operators -Understand the effect of null values on conditions, aggregate calculations, and grouping -Formulate problems involving hierarchically structured data using the Oracle proprietary notation and the SQL standard	Lab#7
9	10/22/2025		Exam -01	(no class)	Exam -01, at the Testing Center
10	10/29/2025	Ch. 8 Ch. 9	Advanced Query Formulation with SQL – 02 Database Design Concepts	Additional advanced topic and features. Describe the role of database design as the foundation of a successful information system	Lab#8 Lab#9

11	11/5/2025		Mongo DB	- Overview of MongoDB - Installing MongoDB - Installing MongoDB on Linux - What is NoSQL? - Documents, collections, and databases - Data-modeling considerations - Creating a MongoDB database and collection	
12	11/12/2025		MongoDB	- Performing Simple Queries - Database and Collection Operations - Creating, Updating, or Deleting Documents - Creating and Running Shell Scripts	Lab#10
13	11/19/2025		Exam -02	(no class)	Exam -02 At the Testing Center
14	11/26/2025	Thanksgiving Break			
15	12/3/2025	Group project presentation			

Note: Any request for a makeup exam without a legitimate excuse will result in a 20% deduction.

Grading scale

Top 25% Students	**A**
Next 25% Students	**A-**
Next 25% Students	**B+**
Remaining 25% Students	**B and below**

Calculated Grade Weights**

- Labs / Assignments (15%)
- Exam I – (30%)
- Exam 2 – (30%)
- Group Project (10%)
- Class attendance (10%)
- Class participations and engagements (5% - Hidden)

***The assignments and calculated grade weights are subject to change at the discretion of the Professor.*

Accessing Grades

Students can check their grades by clicking "My Grades" on the course menu after the grade for each assessment task is released. Assignments There will be 6 assignments (due by 11PM Central Time on due dates): one on relational algebra operations (DB-Chapter 3), one on entity relationship data model (DB-Chapters 5 & 6), two on SQL (DBChapters 4 & 9), and two on MongoDB (MG-Chapters 3 & 5). Each assignment will cover 10% of the final grade. Please see the Assignments link on the course menu and find assignment details in the attached assignment file(s) under each assignment link.

Course Policies

- The Homework-Labs are to be completed in class and are due by the end of class, unless otherwise stated in eLearning.
- Makeup Exam: There is no makeup exams. In case of medical emergency, a medical report is required including physician information.

- Missing exam: Any missing exam without medical report will be graded as Zero.
- Assignments must be submitted through eLearning. Emailed submissions are not accepted.
- Late Assignments: Subject to 10% penalty, 20% penalty after the third day.
- Class Attendance: Students who fail to attend class regularly are inviting scholastic difficulty. Absences may lower a student's grade where class attendance and class participation are deemed essential by the instructor.
- UTD Syllabus Policies and Procedures: Please visit https://go.utdallas.edu/syllabus-policies
- Cheating will not be tolerated. When I find evidence of cheating, the documentation is turned over to the Office of Community Standards and Conduct. (https://www.utdallas.edu/conduct/dishonesty/)

Academic Integrity:

In general, academic dishonesty involves the abuse and misuse of information or people to gain an undeserved academic advantage or evaluation. The common forms of academic dishonesty include:

- Cheating – using deception in the taking of tests or the preparation of written work, using unauthorized materials, copying another person's work with or without consent, or assisting another in such activities.
- Lying – falsifying, fabricating, or forging information in either written, spoken, or video presentations.
- Plagiarism—using the published writings, data, interpretations, or ideas of another without proper documentation

  Plagiarism includes copying and pasting material from the internet into assignments without properly citing the source of the material. Episodes of academic dishonesty are reported to the Vice President for Academic Affairs. The potential penalty for academic dishonesty includes a failing grade on a particular assignment, a failing grade for the entire course, or charges against the student with the appropriate disciplinary body.

COVID-19 Guidelines and Resources

The information contained in the following link lists the University's COVID-19 resources for students and instructors of record. Please see http://go.utdallas.edu/syllabus-policies.

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

NOTE: if the instructor records any part of the course, then the instructor will need to use the following syllabus statement:

The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student Access Ability has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student Access Ability accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Materials

The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student Access Ability accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the Student eLearning Tutorials webpage for video demonstrations on eLearning tools. Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student Access Ability, and many others. Please see the eLearning Current Students webpage for more information.

Server Unavailability or Other Technical Difficulties

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

UT Dallas Syllabus Policies and Procedures

- The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.
- Please go to https://go.utdallas.edu/syllabus-policies for these policies.

Academic Support Resources

- The information contained in the following link lists the University's academic support resources for all students.
- Please see http://go.utdallas.edu/academic-support-resources.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.