DAMG 6210: Data Management and Database Design
Fall 2025

Course Information
Course Title: Data Management and Database Design
Course Number:DAMG 6210
Term and Year: Fall 2025
Credit Hour: 04 Credits
CRN: 17591
Course Format: On ground/ Traditional
Monday's from 6:00 PM-9:20 PM

Instructor Information
Full Name: Dr. Safeeullah Soomro
Email Address: s.soomro@northeastern.edu
Office Hours: 5-7PM Saturday EST

Instructor Biography
Dr. Safeeullah Soomro holds PhD in Computer Science from Graz University of Technology, Austria. He has done Postdoc from UMB Slovakia and Senior Fellow HEA(UK). He has been given many invited and keynote speeches at different international national and conferences. His research interests are Artificial Intelligence, Software Engineering, IoT, Big Data Analysis and Cyber Security. He has chaired many international conferences which are indexed by Scopus, Google and ISI indexing. He is a member of many professional societies like iEEE, ACM, IAER, IENG and ISOC. He has edited books and conferences proceedings of Springer and IEEE. He has written more then 90 research papers in peer reviewed conferences and journals.

Moreover, you can find my information from different international indexing agencies like Scopus, DBLP, ResearchGate, Google Site and Researcher ID where you can see the citation of my research which is also good evidence of my scholarly work. The links are under: -

Research Gate: https://www.researchgate.net/profile/Safeeullah_Soomro
DBLP: http://dblp.uni-trier.de/pers/hd/s/Soomro:Safeeullah
H Index: https://scholar.google.com/citations?user=HrjULugAAAA
Scopus : https://www.scopus.com/authid/detail.uri?authorId=57195643509
Researcher ID: https://orcid.org/0000-0001-5571-1262

Teaching Assistant Information
Full Name: NA

Email Address:NA
Office Hours:NA

Course Prerequisites /Course Description
Studies design of information systems from a data perspective for engineering and business applications; data modeling, including entity-relationship (E-R) and object approaches; user-centric information requirements and data sharing; fundamental concepts of database management systems (DBMS) and their applications; alternative data models, with emphasis on relational design; SQL; data normalization; data-driven application design for personal computer, server-based, enterprise-wide, and Internet databases; and distributed data applications. This course provides insights from a data perspective for engineering and business applications; data modeling, Relational Algebra, including entity-relationship (E-R) and object approaches; user-centric information requirements and data sharing; fundamental concepts of database management systems (DBMS) and their applications; alternative data models, with emphasis on relational design; SQL; data normalization; data-driven application design for personal computer, server-based, enterprise wide, and Internet databases; SQL Injection and distributed data applications. At the end of this course student will have through hands on experience on SQL, Dynamic SQL, PL/SQL and Advanced topics

Course Learning Outcomes
1) Understand Data Modeling Principles: Students will be proficient in data modeling techniques, including entity-relationship (E-R) and object-oriented approaches, to design effective information systems for engineering and business applications.
2) Master Relational Database Concepts: Students will gain a comprehensive understanding of fundamental concepts of relational database management systems (DBMS), relational algebra, SQL, and data normalization; and be able to apply these concepts to design and implement relational databases.
3) Design Data-Driven Applications: Students will be equipped with the skills to design data-driven applications tailored to various computing environments, including personal computer, server-based, and Internet databases.

Required Tools and Course Textbooks.
Students will need to download and install SQL Server database engine and SQL Server Management Studio to their local computers or in a cloud environment (Azure, Google, AWS etc). Oracle Fusion is also free to used for the course where students may get OTBI/BI reports. The teacher will provide all tools information in the class.

Technical/Course Materials Requirements
Jeffrey A. Hoffer, V.Ramesh, Heikki Topi
Modern Database Management Hoffer Database Management, Tenth Edition
Prentice Hall, [ISBN-13: 978-0-13-608839-4]
Dusan Petkovic (2016)
Microsoft SQL Server 2016: A Beginner's Guide, Sixth Edition
McGraw Hill, [ISBN: 978-1259641794]
Additional resources:
W3schools SQL Tutorial will be leveraged to develop basic SQL skills.
Please noter teacher will discuss everything in the class and provide you the further readings and resources.

Course Schedule/Topics Covered

Week	Date	In Class Topic	Assignment Due
1	September 8	**Introduction to DBMS, General Database Purpose and Development History** chapter 1: "Database Environment and Development Process" (Hoffer, Ramesh, & Topi)	**Introduction**
2	September 15	**Introduction to SQL, Entity–Relationship Modeling chapter 2: "Modeling Data in the Organization" (Hoffer, Ramesh, & Topi) Week 3 Enhaced Entity–Relationship Modeling (EER)**	**Class Work and Home Work**
3	September 22	**"The enhanced E-R Model" (Hoffer, Ramesh, & Topi) Week 4 Conceptual and Logical Database Design**	**Class Work and Home Work**
4	September 29	**"Logical Database Design and the Relational Model" (Hoffer, Ramesh, & Topi) chapter 3: "SQL Server Management Studio" (Petkovic)**	
5	October 6	**Physical Database Design chapter 5: "Physical Database Design and Performance" (Hoffer, Ramesh, & Topi) chapter 4: "SQL Components" (Petkovic)**	**Class Work and Home Work**
6	October 13	**Introduction to SQL: Data Definition Language & Data Manipulation Language chapter 6: "Introduction to SQL" (Hoffer, Ramesh, & Topi) chapter 5: "Data Definition Language" (Petkovic) chapter 7: "Modification of a Table's Contents" (Petkovic)**	
7	October 20	**Multiple Table Processing: JOINS and Subqueries chapter 6: "Queries" (Petkovic) chapter 7: "Advanced SQL" (Hoffer, Ramesh, & Topi) page 289- 310**	**Class Work and Home Work**

8	October 27	Midterm Exam	
9	November 3	**Persistent Stored Module chapter 7: "Advanced SQL" (Hoffer, Ramesh, & Topi) from page 320 - end of chapter** **chapter 8: "Stored Procedures and User-Defined Functions" (Petkovic)** **Week 9 Transaction Management / ACID Properties** **ACID Property:** **https://en.wikipedia.org/wiki/ACID_(computer_science)** **https://en.wikipedia.org/wiki/Concurrency_control** chapter 13: "Concurrency Control" (Petkovic	**Class Work and Home Work**
10	November 10	**Introduction to Data Warehouse and Multi-Dimensional Modeling** **chapter 22: "Business Intelligence: An Introduction" (Petkovic)** **chapter 9: "Data Warehousing" (Hoffer, Ramesh, & Topi)**	**Class Work and Home Work**
11	November 17	**Advanced Topics andProject Implemntation and Final Presentataions**	
12	November 24	**Advanced Topics andProject Implemntation and Final Presentataions**	**Class Work and Home Work**
13	December 1	**Advanced Topics andProject Implemntation and Final Presentataions**	
14	December 8	**FINAL EXAM**	**Class Work and Home Work**

Course Distribution

- Attendance/Participation – 10%
- Homework   10%
- Classwork   10%
- Quizzes   10%
- Project Documentation   20 %
- Project Presentataion   10%
- Midterm Exam – 15%
- Final Exam – 25%

Grading Scale

	87-89.9% B+	77-79.9% C+	
	84-86.9% B	74-76.9% C	

95-100% A			
90-94.9% A-	80-83.9%B-	70-73.9% C-	69.9% or below F

Attendance/Late Work Policy

Attendance Policy

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed **a maximum of 2 absences per course, with 3 or more absences resulting in an automatic 'F' for that course.** Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor (coe-mgen-gradadvising@northeastern.edu) to learn more about the Medical Leave of Absence. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave in accordance with the University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded.

End-of-Course Evaluation Surveys
Your feedback regarding your educational experience in this class is particularly important to the College of Engineering. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at **https://neu.evaluationkit.com**. Your survey responses are **completely anonymous and confidential**. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your Northeastern University Mail account notifying you when surveys are available.

Academic Integrity
A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions

regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to http://www.northeastern.edu/osccr/academic-integrity-policy/ to access the full academic integrity policy.

MGEN Student Feedback
Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey: https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaw0Ki

University Health and Counseling Services
As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit https://www.northeastern.edu/uhcs.

Student Accommodations
Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.

For more information, visit https://drc.sites.northeastern.edu.

Library Services
The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit https://library.northeastern.edu
Network Campus Library Services: Northeastern University Library Global Campus Portals

24/7 Canvas Technical Help
For immediate technical support for Canvas, call 617-373-4357 or email help@northeastern.edu

Canvas Student Resources: https://canvas.northeastern.edu/student-resources/

For assistance with my Northeastern e-mail, and basic technical support:
Visit ITS at https://its.northeastern.edu

Email: help@northeastern.edu
ITS Customer Service Desk: 617-373-4357

Diversity and Inclusion
Northeastern University is committed to equal opportunity, affirmative action, diversity, and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration, and an awareness of global perspectives on social justice.

Please visit http://www.northeastern.edu/oidi/ for complete information on Diversity and Inclusion

Title IX
Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.

Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty, and staff.

In case of an emergency, please call 911.

*Please visit **https://www.northeastern.edu/ouec** for a complete list of reporting options and resources both on- and off-campus.*

Dear Safeeullah,

I am writing to provide you with your teaching schedule for the upcoming Fall 2024 semester (September 4, 2024, to December 14, 2024). We have tried our best to accommodate your preferences and align them with the campus' hours of operation and teaching time blocks. Below are the details:

Title	Teaching Schedule

Campus	Arlington, VA (ARL)
CRN	17591
Course Code	DAMG 6210
Course Name	Data Management and Database Design
Instructional Method	Traditional
Date/Time	WednesdMonday 6:00 PM-9:20 PM EST
Classroom	Arlington Campus Tower 1524

A few notes and action items below:

1. All contracts have been issued via email. **If you haven't already, kindly take a moment to review and accept the contract to ensure timely payment.** Contracts expire 10 calendar days from the date of issue. Should you prefer to receive communication via your personal email, please log into your Northeastern email account and set up auto-forwards to your personal email address.

2. Attached is the Fall 2024 course syllabus template. Please adjust according to your teaching dates/times and remove any notes/prompts prior to sharing a final version.

3. Faculty will have access to their courses via the Canvas Learning platform once contracts have been signed. You're welcome to begin building your course on the system once you've received access. Resources on navigating the Canvas platform can be found here.

4. The Academic Calendar is an excellent resource for all Faculty to reference. Please take a moment to review key dates in the calendar that may impact your teaching schedule.

If you have any questions or need further assistance, please do not hesitate to contact me.   Best regards,