

Fall 2022

## ISM 218-02: Database Systems

Department of Information Systems & Supply Chain Management  
Bryan School of Business and Economics

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### Contact Information

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### Catalog Description

A database is an organized collection of data, generally stored and accessed electronically. Database management systems aim to define, manipulate, retrieve, and manage data in a database. Design, implementation, query, and use of database management systems are covered.

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### Detailed Description

Big data could provide new business opportunities by supporting data-driven decision-making. Database systems are essential to manage such a large volume of data effectively and efficiently, and thus are at the heart of management information systems and decision support systems. Given that ‘garbage in, garbage out’, database systems play a critical role in facilitating business analytics and data science. To help students equip with the imperative knowledge and skills on database systems, this course is designed to provide a comprehensive introduction to managing data using database management systems (DBMS). It consists of three main parts – database design, implementation, and use – with a particular focus on the relational database model among other alternatives. This course provides students with key concepts relating to (i) database management systems, (ii) data analysis and design using entity-relationship diagram (ERD), (iii) database implementation and use based on Structured Query Language (SQL), and (iv) data warehousing. Advanced topics are covered, including big data management systems (e.g., NoSQL) and business analytics.

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### Course Learning Objectives

Upon completing this course, students will have a useful experience with a leading DBMS software and acquire the core knowledge and skills to:

- Understand the basic concepts of data storage, retrieval, and transformation
- Develop conceptual data models of database based on system requirements
- Develop logical data models from given conceptual data models
- Create/modify/drop tables and columns on databases
- Insert/update/delete data in tables on databases
- Retrieve data from a database table
- Display the results of arithmetic operations in outputs
- Specify searching conditions to restrict rows in outputs
- Join multiple tables to retrieve data from the combined table

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## Course Website

All information and materials pertaining to this course will be available on the Canvas platform (<https://uncg.instructure.com/>). Students will be responsible for any information or announcements updated on Canvas. All graded deliverables will be submitted electronically through Canvas.

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## Course Structure

This course is Web-based and delivered online. It blends online lectures, assignments, online discussions, and exams. Regular weekly activities consist of three parts on a weekly basis:

(1) **Online Lectures** (asynchronous)

Online lectures will be delivered in an asynchronous way with recorded videos, which will be uploaded on Canvas Every Tuesday. Every week, online lectures will be followed by a weekly quick quiz.

(2) **Virtual Office Hours** (synchronous)

To assist students' learning, office hours for Q&A will be running throughout the semester on Zoom. The virtual office hours are every Tuesday at 3:30 p.m. – 5 p.m. Students can access the link provided on Canvas.

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## Course Materials

All teaching materials including lecture notes, assignments and other learning resources needed for this course are available on Canvas.

A. Required Textbook

- There is no required textbook. This course is basically based on lecture notes provided on Canvas.
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## Software Needed for the Course

This course makes extensive use of MySQL, a leading open-source software for database management systems, which has been widely used in various industries. No prior knowledge and experience are assumed. Instructions on installation and use of the software will be introduced in the course.

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## Grading Policy

Assignments	50%
Weekly Quick Quizzes	10%
Midterm Exam	15%
Final Exam	25%
(Extra Credit)	(10%)
<b>TOTAL</b>	<b>100% + (10% extra credit)</b>

### Letter Grades According to Total Percentage

94 or above = A, 90-93.99 = A-, 86-89.99 = B+, 83-85.99 = B, 80-82.99 = B-, 76-79.99 = C+, 73-75.99 = C, 70-72.99 = C-, 66-69.99 = D+, 63-65.99 = D, 60-62.99 = D-, below 60 = F

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## **Assignments (50%)**

There will be 6 assignments dealing with specific topics in database management systems (details will be posted on Canvas during the course). Assignments are due on the date/time specified in the course.

- i. Assignment 1: Entity Relationship Diagram (10%)
- ii. Assignment 2: Getting Started with MySQL (5%)
- iii. Assignment 3: Normalization (10%)
- iv. Assignment 4: Database Implementation (5%)
- v. Assignment 5: SQL I (10%)
- vi. Assignment 6: SQL II (10%)

## Late Submission Policy

Late submission will be assessed a grading penalty. Assignments submitted after the due date may not be accepted but, for valid excuses, there will be a minimum of a 20% reduction for each day late.

## Data Camp

For some of assignments, students will use Data Camp (<https://www.datacamp.com/>), which offers interactive online learning environments for data science including database systems and SQL. Students will receive their free access credentials during the course. NO extra costs for this course.

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## **Weekly Quick Quizzes (10%)**

Every week, course materials will be followed by a short quiz (multiple choices/filling the blank) on Canvas. They are designed to “quickly” test an understanding of each lecture material.

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## **Midterm Exam / Final Exam (15% / 25%)**

A timed exam is required for the course. The exam will test knowledge of database systems and the use of software. Details will be announced as going along in the course.

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## **Extra Credit (optional, up to 10%)**

To give students opportunities to make up for missing or lost scores, extra activities to earn extra credit (outside of regular scores) will be provided, which is optional, not mandatory. Details will be provided during the course.

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## **Participation**

While students can take the online lectures in their own pace, students are strongly encouraged to follow the course schedule on a weekly basis, as the following week’s lecture is dependent on the previous lectures. All content needed to complete quizzes, assignments, and exams will be covered in lectures.

Beyond the class hours, students with questions or any kind of follow-up from class can take advantage of office hours, either in person or online, to speak with the instructor.

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## Tentative Class Schedule

The following schedule provides general guidelines and is subject to change. A detailed schedule prior to the beginning of each week will be posted on Canvas. It will include the week's readings, assignments, instructions, etc. It is the student's responsibility to stay on track with course materials and quizzes/assignments on a weekly basis to be successful in the course.

Week	Date	Topic	Assignment/Quiz
1	Aug. 18	Introduction to Database Systems	Quiz 1
2	Aug. 23 / Aug. 25	Entity-Relationship Diagram (ERD) I	Quiz 2
3	Aug. 30 / Sep. 1	Entity-Relationship Diagram (ERD) II	Quiz 3 Assignment 1
4	Sep. 6 / Sep. 8	Transforming ERD to Relational Model	Quiz 4
5	Sep. 13 / Sep. 15	Introduction to MySQL	Assignment 2
6	Sep. 20 / Sep. 22	Normalization I	Quiz 5 Assignment 3
7	Sep. 27 / Sep. 29	Normalization II	
8	Oct. 4 / Oct. 6	Database Implementation	Assignment 4
9	Oct. 11 / Oct. 13	(No Class) Fall Break	
10	Oct. 20 (tentative)	<b>Midterm Exam (online)</b>	
11	Oct. 25 / Oct. 27	SQL I – Retrieving Data from a Single Table	Quiz 6 Assignment 5 – Part I
12	Nov. 1 / Nov. 3	SQL II – Joining Data from Multiple Tables	Quiz 7 Assignment 5 – Part II
13	Nov. 8 / Nov. 10	SQL III – Nested Subqueries	Quiz 8
14	Nov. 15 / Nov. 17	SQL for Business Analytics	Quiz 9 Assignment 6
15	Nov. 22	Big Data Management and NoSQL (No Class on Nov. 24 for Thanksgiving)	Quiz 10
16	Nov. 29	Final Review	
17	Dec. 6 (tentative)	<b>Final Exam (online)</b>	

- Topics can be adjusted depending on the progress of the class.

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## UNCG Policy for COVID-19

As we return for Fall 2022, all students, faculty, and staff and all visitors to campus are required to uphold UNCG's culture of care by actively engaging in behaviors that limit the spread of COVID-19. While face-coverings are optional in most areas on campus, individuals are encouraged to wear masks. All individuals and visitors to campus are asked to follow the following actions:

- Engaging in proper hand-washing hygiene.
- Self-monitoring for symptoms of COVID-19.
- Staying home when ill.
- Complying with directions from health care providers or public health officials to quarantine or isolate if ill or exposed to someone who is ill.
- Completing a self-report when experiencing COVID-19 symptoms, testing positive for COVID-19, or being identified as a close contact of someone who has tested positive.
- Staying informed about the University's policies and announcements via the COVID-19 website.

**Students who are ill, quarantining, or isolating should not attend in-person class meetings, but should instead contact their instructor(s) so alternative arrangements for learning and the submission of assignments can be made where possible.**

As we continue to manage COVID-19 on our campus, we are following the lead of the local health department and we will adjust our plans to balance student success, instructional requirements, and the hallmarks of the collegiate experience with the safety and wellbeing of our campus community.

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## Statement of Students' Rights and Responsibilities

As a student in my class, you have explicit rights and responsibilities. Your full understanding and acceptance of the following rights and responsibilities can lead to more effective learning and more productive use of our time together.

### **You have the right to expect:**

1. Your professor to be prepared for each class, to start class promptly at the designated time and to end class at the designated time.
2. Your professor to teach all scheduled classes or arrange for a qualified substitute if it is necessary to miss class because of illness or University approved commitments.
3. Clear statements of course expectations, policies, testing and grading practices and student performance.
4. Your professor to hold a reasonable number of office hours to discuss assignments or to assist you with course matters.

5. Knowledgeable assistance from your professor regarding class assignments and course content.
6. Professional behaviors reflecting equitable treatment, ethical practices and respect for your rights.
7. Opportunities to challenge ideas and defend your beliefs in a professional manner.
8. To be challenged to grow both academically and professionally.
9. Information regarding career opportunities related to ISM programs.
10. Your professor to abide by University policies.
11. Fairness and clarity in evaluation of your performance.
12. Adequate opportunity to appeal any perceived violations of the above rights.

**You have specific responsibilities to:**

1. Plan your study and work schedule appropriately to allow sufficient time to do quality class work.  
I suggest you devote at least 6 to 8 hours per week to this class.
2. Arrive at each class on time and be prepared to discuss assigned readings and participate in discussions.
3. Complete assignments by due date and submit quality work.
4. Understand and follow course policies as explained in class and in the syllabus.
5. Commit yourself to grow both academically and professionally.
6. Work effectively and cooperatively as a team member on group projects if so assigned.
7. Practice ethical behaviors and display respect for rights of others.
8. Contact your instructor and discuss circumstances which may prevent acceptable performance and to make such contact on a timely basis.
9. Fully understand and abide by the UNCG Academic Integrity Policy and other University policies relating to student conduct.
10. Report observed violations of the UNCG Academic Integrity Policy.

See the Student Section of the Bryan School website for additional information about “Faculty and Student Guidelines,”

<https://bryan.uncg.edu/wp-content/uploads/2017/08/Faculty-and-Student-Guidelines-2018-2019.pdf>

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## **Academic Integrity, Ethical Issues and the Honor Code Policies**

Students are responsible for becoming familiar with the Academic Integrity Policy in all its aspects and for indicating their knowledge and acceptance of the Policy by signing the Academic Integrity pledge on all major work submitted for the course. All individual assignments must be done by only you. Individuals should not work on assignments together. A single failure to follow this policy will result in a grade of 0 on that assignment; subsequent violations of this policy will result in a grade of F for the course. University students are expected to conduct themselves in accordance with the highest standards of academic honesty. I will pursue cheating as far as the university allows me. Specific information on the Academic Integrity Policy may be found on the UNCG web site at <http://academicintegrity.uncg.edu>.

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