

Spring 2024

## CS 631-854: Data Management System Design

Shantanu Sharma

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# Syllabus

## Course Information

**Course Number:** CS631

**Course Title:** Data Management System Design

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## Faculty Contact Information

**Instructor:** Shantanu Sharma

**Email:** [shantanu.sharma@njit.edu](mailto:shantanu.sharma@njit.edu)

**Live Sessions:** Wednesday, 6:00 PM - 7:00 PM

**Office Hours:** By appointment, contact via Zoom

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## Course Description

The Outcome of the course is to introduce database systems. The course focuses on the following issues: Relational Database Model, Formal and Commercial Database Languages (Relational Calculus and SQL), Database Design, Storage (File Organizations, External Hashing, Indexing), Query Processing and Optimization, Formal Database Design (Normalization) and Transaction Processing and Concurrency Control.

The students will learn how to design and implement a database application through a small project. They will get hands-on experience with commercial database management systems (DBMS) by writing application programs that involve the commercial DBMS query language SQL.

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## Textbook and Materials

R. Elmasri & S. B. Navathe. *Fundamentals of Database Systems*. Addison Wesley, 7th edition, 2015, ISBN 978-0133970777

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## Course Outcomes

- Design a database given an application specification.
  - Query a database using both SQL, relational Algebra, and Calculus.
  - Develop an application that accesses a database.
  - Design a physical database.
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## Grading Scale

Grade	Percentile	Percentage
A	4.0	85-100%
B+	3.5	75-85%
B	3.0	60-75%
C+	2.5	55-60%

C	2.0	50-55%
F	N/A	0-49%

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## Grading Categories

Categories	Percentage
Assignments	15%
Project	25%
Midterm	25%
Final	35%

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## Late Work and Make-Up Exams

Late work and make-up exams will be accepted and/or given upon the instructor's discretion. Please note, the instructor may choose to require that late work and make-up exams be given only after the student provides written documentation to the Dean of Students. In this case, the instructor will defer their decision to the Dean of Students who will then inform the instructor whether late work will be accepted or a make-up exam will be given.

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# Sharing Information

Students are free to discuss assignments with their colleagues. However, they should not take any written (electronic or otherwise) record away from the discussion. This applies when the assignment is supposed to be an individual effort or whenever two teams discuss common problems they are each encountering (inter-group collaboration). After the discussion, it is advisable to engage in at least half an hour of non-course related activity before starting to work on the assignment. This will assure that students are able to reconstruct by themselves what they learned from the discussion.

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## Student Conduct

The NJIT University code on Academic Integrity, found at <http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>

[Links to an external site.](#)

, will be followed in all courses.

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## Student with Disabilities Codes

NJIT adheres to section 504 of the Rehabilitation Act (ADA) of 1990. Appropriate accommodations are provided at no cost to the student. If you have any questions or would like additional information, please contact Dr. Phyllis Bolling, Center for Counseling and Psychological Services (C-CAPS), Campbell Hall, (entry level), room 205, (973) 596-3420. For further information, visit the [Accessibility Resources website](#)

[Links to an external site.](#)

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## Technical Support

For assistance with the following items, please contact NJIT IST Service Desk at: 1-973-596-2900 or <http://ist.njit.edu/servicedesk>

[Links to an external site.](#)

\*NJIT passwords may be changed using the [Global Password Change mechanism](#)

[Links to an external site.](#)

. You will need to know your current UCID and UCID password. Questions can be referred to 1-973-596-2900.

Periodic changing of passwords and strategies for managing them are best practice for anyone using a computer. All members of the university community are encouraged to review [tips for password management](#)

[Links to an external site.](#)

and to change passwords regularly.

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# Software and Hardware Requirements

Sometimes, you will be required to use Word processing and presentation software, such as MS Word and PowerPoint found in Microsoft Office. You will also need to be comfortable with various aspects of using the Internet such as:

- Search engines
- Newsgroups
- E-mail
- Ability to download files

To view certain media elements in this course, you will need to have several browser plug-ins such as Shockwave, Flash, and Adobe Acrobat on your computer. Use the links in the course to download and install the appropriate software application.

**Important:** With regards to plug-ins, ensure you are using the most recent version of each plug-in you require. View the [hardware and software requirements](#)

[Links to an external site.](#)

for this course.

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# Student Services and Support