

Data Process and Structure

MASY1-GC 3505 | 100 | Spring 2024 | 1/24/2024 - 5/1/2024 | 3 Credit

Modality: In-person

Course Site URL: <https://brightspace.nyu.edu/>

General Course Information

Name/Title: Kelly Kim

NYU Email: Kelly.kim@nyu.edu

Class Meeting Schedule: 1/24/2024 - 5/1/2024 / Wednesday | 06:20pm -- 08:55pm

Class Location: TBD

Office Hours: can be scheduled via email for Zoom meeting or live meeting

Description

This course examines database models from a managerial perspective with an in-depth focus on business data requirements, operational rules, procedures, and logical structure. Using a case study method and real-world exercises, students research and present real world scenarios and develop automated business process solutions through evaluation and discussion. Upon successful completion of this course the student will have gained a comprehensive knowledge and understanding of data process and structures, database design and database management. Topics covered include: relational algebra and calculus, SQL queries, and business rules; database applications and Internet applications; indexing, disks and files; query evaluation; external sorting, evaluating relational operators; the query optimizer; transactional management and concurrency control; recovery.

Prerequisites

MASY1-GC3500 Database Design and Management

Learning Outcomes

At the conclusion of this course, students will be able to:

- Analyze business requirements to identify entities, relationships and constraints in databases Design an entity relationship (ER) data model from identified entities, relationships, and constraints
- Analyze relations to reduce data redundancy using 1NF, 2NF, and 3NF
- Implement the data model into a physical database design
- Translate transactional user criteria into SQL manipulation language scripts
- Create relational algebra statements from user criteria

Communication Methods

Be sure to turn on your [NYU Brightspace notifications](#) and frequently check the “Announcements” section of the course site. This will be the primary method I use to communicate information critical to your success in the course. To contact me, send me an email. I will respond within 24 hours.

Structure | Method | Modality

There are 14 session topics in this course. The session topics are organized into three (3)

areas of study: 1) History, 2) Learning Principles, and 3) Instructional Design in Practice.

Active learning experiences is the key component of the course. Assignments, group project, and exams will be based on course materials (e.g., readings, videos), lectures, and class discussions. Course sessions will be conducted synchronously on NYU Zoom, which you can access from the course site in [NYU Brightspace](#).

Expectations

Learning Environment

You play an important role in creating and sustaining an intellectually rigorous and inclusive classroom culture. Respectful engagement, diverse thinking, and our lived experiences are central to this course, and enrich our learning community.

Participation

You are integral to the learning experience in this class. Be prepared to actively contribute to class activities, group discussions, and work outside of class.

Assignments and Deadlines

Please submit all assignments to the appropriate section of the course site in [NYU Brightspace](#). If you require assistance, please contact me BEFORE the due date.

Course Technology Use

We will utilize multiple technologies to achieve the course goals. I expect you to use technology in ways that enhance the learning environment for all students.

Feedback and Viewing Grades

I will provide timely meaningful feedback on all your work via our course site in NYU Brightspace. You can access your grades on the course site Gradebook.

Attendance

I expect you to attend all class sessions. Attendance will be taken into consideration when determining your final grade.

Refer to the [SPS Policies and Procedures page](#) for additional information about attendance.

Textbooks And Course Materials

Database Systems: Design, Implementation, & Management

Carlos Coronel and Steven Morris

2019

13th Edition

Publisher: Cengage

ISBN-13: 9781337627931

ISBN-10: 1337627933

\$120

Grading | Assessment

Assignments range from written work on database design to SQL to building backend database code to demonstrate the comprehension and application of database design concepts and build. Each assignment should take about 2 hours to complete. The Group Project will take few days to complete and be presented at session 13. The open book Midterm and Final Exams will each take about 2 hours to complete. All assignments must be type written when possible and the answers must not be reordered. Diagrams can be hand drawn clearly. Grade is determined by providing correct and completed answers to problems. If assumptions must be made, they should be clearly stated. E-R model must be clearly legible.

<u>DESCRIPTION</u>	<u>PERCENTAGE</u>
Assigned Activities (total of 10)	20%
Group Project	20%
Participation	10%
Midterm	25%
Final Exam	25%
<hr/> TOTAL POSSIBLE	<hr/> 100%

Failure to submit assignments on time will result in a grade reduction of -10% first day, -20% second day, -30% third day, -40% fourth day, -50% fifth day, -60% sixth day, and -100% seventh day. No form of extra-credit work is permissible. Students will not be permitted to redo/revise/resubmit any completed and graded assignment. Late Projects will not be accepted.

Student's submission of assignments and exams will be returned with comments and corrections. Grades will be posted online. Formal review of assignments and midterm will be conducted during class.

See the ["Grades" section of Academic Policies](#) for the complete grading policy, including the letter grade conversion, and the criteria for a grade of incomplete, taking a course on a pass/fail basis, and withdrawing from a course.

Course Outline

Start/End Dates: 1/24/2024 - 5/1/2024 / Wednesday

Time: 06:20pm -- 08:55pm

No Class Date(s): Wednesday, March 20, 2024

Special Notes: Spring Break 03/18/24 - 03/24/24

Session 1, 01/24/24

Syllabus Review

Chapter 1 Database Systems

Exercise

For next session:

Assignment 1, due 1/30/24 11pm

Read Chapter 2

Session 2, 01/31/24

Review Assignment 1
Chapter 2 Data Models
Exercise

For next session:

Assignment 2, due 2/06/24 11pm
Read Chapter 3

Session 3, 02/07/24

Review Assignment 2
Chapter 3 Relational Database Model
Exercise

For next session:

Assignment 3, due 2/13/24 11pm
Read Chapter 4

Session 4, 02/14/24

Review Assignment 3
Chapter 4 Entity Relationship Modeling
Exercise

For next session:

Assignment 4, due 2/20/24 11pm
Read Chapter 5

Session 5, 02/21/24

Review Assignment 4
Chapter 5 Advanced Data Modeling
Exercise

For next session:

Assignment 5, due 2/27/24 11pm
Read Chapter 6

Session 6, 02/28/24

Review Assignment 5
Chapter 6 Normalization of Database Tables
Exercise
Prepare for Midterm

For next session:

Midterm next week
Assignment 6, due 3/12/24 11pm

Read Chapter 7

Session 7, 03/06/24

Open book Midterm

For next session:

Assignment 6, due 3/12/24 11pm

Read Chapter 7

Session 8, 03/13/24

Review Midterm

Review Assignment 6

Chapter 7 Introduction to SQL

Exercise

For next session:

Assignment 7, due 3/26/24 11pm

Read Chapter 8

No Class 3/20/24 Spring Break

Session 9, 03/27/24

Review Assignment 7

Chapter 8 Advanced SQL

Exercise

For next session:

Assignment 8, due 4/02/24 11pm

Read Chapter 9

Session 10, 04/03/24

Review Assignment 8

Chapter 9 Database Design

Exercise

For next session:

Assignment 9, due 4/09/24 11pm

Read Chapter 10

Session 11, 04/10/24

Review Assignment 9

Chapter 10 Transaction Management

Exercise

For next session:

Assignment 10, due 4/16/24 11pm

Read Chapter 11 and 12

Session 12, 04/17/24

Review Assignment 9
Chapter 11 Database Performance Tuning and Query Optimization
Chapter 12 Distributed Database Management Systems
Exercise

For next session:

Project Presentation

Session 13, 04/24/24

Project Presentation

Session 14, 05/01/24

Final Exam

NOTES:

The syllabus may be modified to better meet the needs of students and to achieve the learning outcomes.

The School of Professional Studies (SPS) and its faculty celebrate and are committed to inclusion, diversity, belonging, equity, and accessibility (IDBEA), and seek to embody the IDBEA values. The School of Professional Studies (SPS), its faculty, staff, and students are committed to creating a mutually respectful and safe environment (*from the [SPS IDBEA Committee](#)*).

New York University School of Professional Studies Policies

1. **Policies** - You are responsible for reading, understanding, and complying with [University Policies and Guidelines](#), [NYU SPS Policies and Procedures](#), and [Student Affairs and Reporting](#).

2. **Learning/Academic Accommodations** - New York University is committed to providing equal educational opportunity and participation for students who disclose their dis/ability to the [Moses Center for Student Accessibility](#). If you are interested in applying for academic accommodations, contact the [Moses Center](#) as early as possible in the semester. If you already receive accommodations through the Moses Center, request your accommodation letters through the Moses Center Portal as soon as possible (mosescsa@nyu.edu | 212-998-4980).

3. **Health and Wellness** - To access the University's extensive health and mental health resources, contact the [NYU Wellness Exchange](#). You can call its private hotline (212-443-9999), available 24 hours a day, seven days a week, to reach out to a professional who can help to address day-to-day challenges as well as other health-related concerns.

4. **Student Support Resources** - There are a range of resources at SPS and NYU to support your learning and professional growth. For a complete list of resources and services available to SPS students, visit the [NYU SPS Office of Student Affairs site](#).

5. **Religious Observance** - As a nonsectarian, inclusive institution, NYU policy permits members of any religious group to absent themselves from classes without penalty when required for compliance with their religious obligations. Refer to the [University Calendar Policy on Religious Holidays](#) for the complete policy.

6. **Academic Integrity and Plagiarism** - You are expected to be honest and ethical in all academic work. Moreover, you are expected to demonstrate how what you have learned incorporates an understanding of the research and expertise of scholars and other appropriate experts; and thus recognizing others' published work or teachings—whether that of authors, lecturers, or one's peers—is a required practice in all academic projects.

Plagiarism involves borrowing or using information from other sources without proper and full credit. You are subject to disciplinary actions for the following offenses which include but are not limited to cheating, plagiarism, forgery or unauthorized use of documents, and false form of identification

[Turnitin](#), an originality detection service in NYU Brightspace, may be used in this course to check your work for plagiarism.

Read more about academic integrity policies at the NYU School of Professional Studies on the [Academic Policies for NYU SPS Students](#) page.

7. **Use of Third-Party Tools** - During this class, you may be required to use non-NYU apps/platforms/software as a part of course studies, and thus, will be required to agree to the "Terms of Use" (TOU) associated with such apps/platforms/software.

These services may require you to create an account but you can use a pseudonym (which may not identify you to the public community, but which may still identify you by IP address to the company and companies with whom it shares data).

You should carefully read those terms of use regarding the impact on your privacy rights and intellectual property rights. If you have any questions regarding those terms of use or the impact on the class, you are encouraged to ask the instructor prior to the add/drop deadline.