NYU SCHOOL OF PROFESSIONAL STUDIES

Database Design & Management

MASY1-GC 3500 | 104 | Spring 2024 | 01/22/2024 -05/06/2024 | 3 Credit
Modality: In-person
Course Site URL: https://brightspace.nyu.edu

General Course Information
Name/Title: Ankur Agrawal, Adjunct Instructor, PhD
NYU Email: ankur.agrawal@nyu.edu
Class Meeting Schedule: 01/22/2024 -05/06/2024 | Mondays | 06:20pm -- 08:55pm
Class Location: 7 East 12th, Room 127
Office Hours: Contact me via email to make appointment.

Description
This is an introductory course for database management systems and applications. It presents concepts, methodologies, and techniques important for database analysis, design, implementation, and management. The course focuses on the logical, conceptual, and physical implementation of relational database management systems so that students can assimilate a basic knowledge of database design as it relates to business rules. The course utilizes a combination of lectures, hands-on computer exercises, examples from Oracle and other leading databases, and real-world database projects to accomplish the learning process.

Prerequisites
MASY1-GC1240 – Information Technology and Data Analytics

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

- Create databases based on the relational database model
- Construct conceptual data logical data models
- Use normalization to providing efficiencies and data integrity
- Transform business requirements into viable, efficient, and reliable databases aligned with business requirements
- Appraise the objectives of data and information management

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) Data Modeling, 2) Basic SQL, and 3) Advanced SQL.

Active learning experiences and small group projects are key components of the course.

Assignments and exams will be based on course materials (e.g., readings, videos), lectures, and class discussions. Course sessions will be conducted in-person and will meet once a week on Monday, with assignments, announcements and emails being sent through Brightspace. Students are expected to check email and/or Brightspace at least twice a week for announcements concerning assignments, class changes or cancellations, and other important information. The course will involve lectures/discussions as well as two hands-on practical real-life projects.

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
We will have homework or group assignments assigned every week and will be due the following week. All assignments must be submitted to the appropriate Brightspace assignment.

Course Technology Use
All class sessions require use of technology (e.g., laptop, computer lab) for learning purposes.

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
Recommended Textbook (print or eBook): Murach's MySQL (4th Edition) by Joel Murach, Published November 2023, ISBN 978-1-943873-10-4

Required Software (on your personal PC)
We will be using MySQL database for assignments and labs in this course. MySQL can be downloaded for free from: https://dev.mysql.com/downloads/installer

We will be learning to use Python to connect to and query a database. Python can be downloaded for free from: https://www.python.org/downloads

Grading | Assessment
All assignments must be submitted through the appropriate channels (assignments, discussion topics etc.) in Brightspace.

Your grade in this course is based on your performance on multiple activities and assignments. Since all graded assignments are related directly to course objectives and learning outcomes, failure to complete any assignment will result in an unsatisfactory course grade. Please carefully proof-read your written assignments before submitting them for a grade. I will update the grades on the course site each time a grading session has been completed - typically three (3) days following the completion of an activity.

DESCRIPTION	PERCENTAGE
Class Participation and Attendance	10%
Individual Homework Assignments	30%
Midterm Exam	20%
Project 1	10%
Project 2	10%
Final Exam	20%
TOTAL POSSIBLE	100%

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: 01/22/2024 -05/06/2024 / Mondays
Time: 06:20pm -- 08:55pm
No Class Date(s): Monday – 2/19/2024 & 03/18/2024
Special Notes: Spring Break 03/18/24 - 03/24/24

Session 1 - 01/22/24
Topic Description:
- Introduction to Relational Databases and MySQL
- MySQL setup

Assignments:
- Homework 1 – Introductory assignment

Session 2 – 01/29/24
Topic description –
- Introduction to ER Model

Assignments:
- Homework 2 – ER diagrams

Session 3 – 02/05/24
Topic description –
- Converting ER to Schema diagrams

Assignments:
- Homework 3 – Schema diagrams

Session 4 – 02/12/24
Topic description –
- Normalization

Assignments:
- Homework 4 – Normalization

02/19/2024 – No Class

Session 5 – 02/26/24
Topic description –
- Projects I and II Discussion
- Project I deliverable a due

Assignments:
- Project I deliverable b
- Project II Preparation

Session 6 – 03/04/24
Topic description –
- Project I deliverable b due
- Midterm based on Sessions 1-5

Session 7 – 03/11/24
Topic description –
- Introduction to SQL

Assignments:
- Homework 5 - SQL basics
- Project I deliverable c

03/18/2024 – No Class

Session 8 – 03/25/24
Topic description –
- SQL Fundamentals

Assignments:
- Homework 6 - SQL fundamentals

Session 9 – 04/01/24
Topic description –

- Advanced SQL – Sub queries

Assignments:

- Homework 7 – Advanced SQL

Session 10 – 04/08/24
Topic description –

- Advanced SQL – Views, Stored program

Assignments:

- Homework 8 - Advanced SQL

Session 11 – 04/15/24
Topic description –

- Database programming using Python I

Assignments:

- Homework 9 - Python programming I

Session 12 – 04/22/24
Topic description –

- Database programming using Python II

Assignments:

- Homework 10 - Python programming II

Session 13 – 04/29/24
Topic description –

- Project I deliverable c due
- Final Exam based on Sessions 7-12

Session 14 – 05/06/24
Topic description –

- Project II Presentation

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*).

NYU SCHOOL OF PROFESSIONAL STUDIES

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.