

Course Syllabus for DS 716: Data Management for Data Science

NOTE: This syllabus document contains the basic information of this course. The most current syllabus is available in the full course.

Course Description

This course explores the various approaches for data management used in data science. We present how data is collected, transformed, stored, and delivered for use in data science projects.

Course Alignment with Program Outcomes: This course addresses the following competencies and program outcomes of the Masters of Science of Data Science:

- **Data Management:** Acquire skills to ethically manage, clean, and securely store both structured and unstructured data, using advanced database techniques for effective data extraction and quality assurance. Extend these capabilities to data engineering by transforming raw data into ready-to-train formats.

Course Objectives

Students may vary in their competency levels on these objectives. You can expect to acquire these skills only if you honor all course policies, complete all assigned work in good faith and on time, and meet all other course expectations as a student. At the conclusion of this course, you will be able to:

- Students will be able to collect, prepare, store, and manage structured or unstructured data from diverse sources while adhering to data privacy, security regulations, and ethical standards.
- Develop, implement and evaluate strategies for data cleaning, transformation, preprocessing and quality assurance to ensure data reliability and integrity.
- Write efficient and complex queries using query languages to extract and transform data from various sources.

Course Components

Assignments:

The assignments account for 30% of your grade in this course.

- Assignment Lesson #1 – Create and Populate Database Tables
- Assignment Lesson #3 – CREATE TABLE Statement and Table Constraints
- Assignment Lesson #4 – SQL Part I – Simple SQL Queries
- Assignment Lesson #5 – SQL Part II – Advanced SQL Queries
- Assignment Lesson #8 – Querying Cubes with SQL
- Assignment Lesson #13 – Databricks SQL

Quizzes

The quizzes account for 25% of your grade in this course and can be quite challenging to work through. Please let your instructor know if you need help, by using the Discussions to post your questions and reach out to the other students in the class for help and feedback.

Discussions

Discussions account for 10% of your grade in this course. Share questions or ideas about the readings in your textbook, the course materials, or quizzes. Reply to your classmates' posts.

Exams

There will be one comprehensive final exam that accounts for 35% of your grade in this course. No make-up exams will be given.

Extra Credit Assignments

You can earn as much as 10% applied to your final grade by working on extra credit assignments.

Grading

Your mastery of course content is assessed using a variety of methods:

Activity	Percentage
Assignments	30%
Quizzes	25%
Discussions	10%
Exams	35%
Extra Credit Assignments	10%

Final grades are assigned using the following scale:

90–100%	A
80–89%	B
60–79%	C
0–59%	F