Lecture 00: Course Mechanics

DATA 351: Data Management with SQL

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This lecture covers the course mechanics for DATA 351: Data Management with SQL.

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1 Welcome!

1.1 Course Welcome

DATA 351: Data Management

Prof. Lucas Cordova

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1.2 Course Support

Office Hours (15-minute appointments or drop-in):

Day	Salem	Portland
Monday	10:30 - 11:30 AM	4:30 - 5:30 PM
Wednesday	10:30 - 11:30 AM	4:30 - 5:30 PM (Salem)

If scheduled times do not work, contact me to arrange an alternative meeting.

> **Note**
>
> - The link to schedule an appointment is on Canvas.
> - Discrod Server available (optional). Link provided on Canvas.

2 Course Information

2.1 Catalog Description

Data management is core to both applied computer science and data science. This course covers:

- Storing, managing, and processing datasets of varying sizes and types
- Relational databases and file-based databases
- Cloud-based storage and data streaming
- Accessing data using Structured Query Language (SQL)

Prerequisites: CS 151 or DATA 151

Credits: 4.0

2.2 Course Description

As large-scale data becomes increasingly prevalent, meaningful analysis requires data be stored and organized for efficient access.

This course introduces the fundamental skills of **data engineering**:

- Acquiring data
- Storing data
- Maintaining data repositories

The course centers on **PostgreSQL** with techniques transferable to other SQL variants.

2.3 Learning Outcomes

Students will gain working knowledge in:

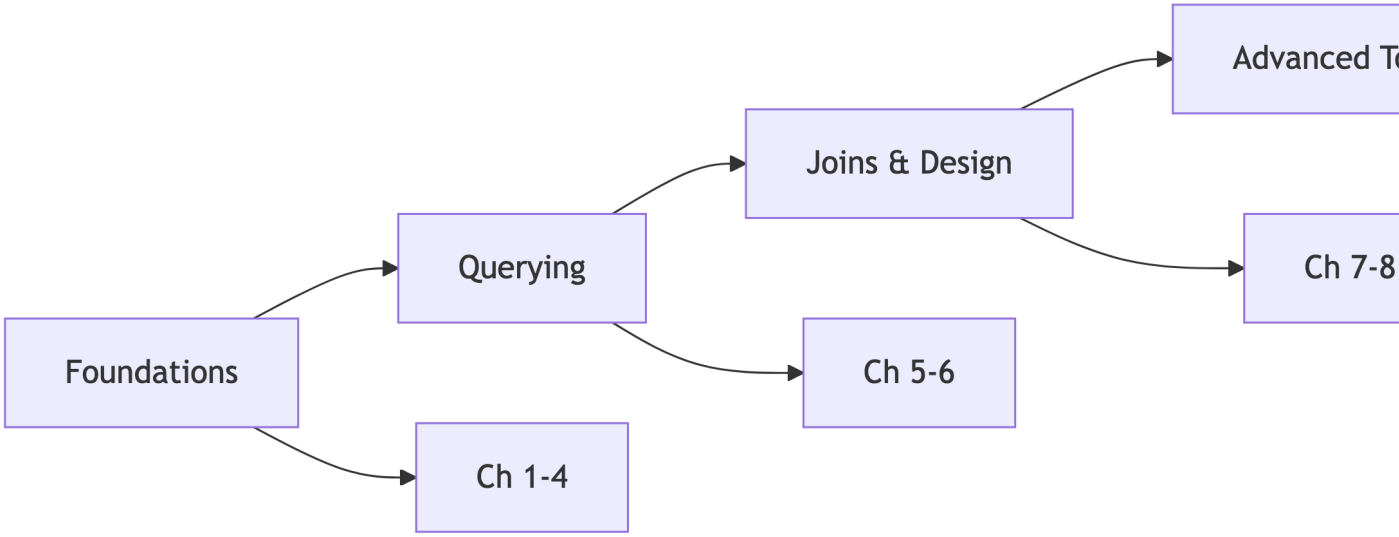
- Fundamental tasks of data engineering and relational database concepts
- Working with and querying relational databases using SQL
- Exploring trends and computing descriptive statistics using SQL
- Joining database tables to construct complex relationships
- Advanced database queries utilizing text mining and spatial analysis

2.4 Learning Objectives

Upon completion, students will be able to:

- Define relational databases and articulate their advantages
- Create database tables, parse and insert data, specify relationships
- Query databases using advanced filters, descriptive statistics, and joins
- Apply SQL to complex data types (text parsing, spatial analysis)
- Integrate multiple data sources and extract insights

2.5 Course Roadmap



2.6 Required Materials

Textbook:

Practical SQL: A Beginner's Guide to Storytelling with Data (2nd ed.)

Anthony DeBarros | ISBN: 9781718501065

CodeGrade Enrollment Key ($35):

- Available via Bookstore (Bearcat Bundle) or personal credit card
- Accessed through Canvas (do not access CodeGrade directly)
- You will set up your account during the first assignment

3 Assessments

3.1 Grade Weighting

Deliverable	Weight
Attendance & Participation	10%
Assignments (approx. 10)	40%
Project	30%
Midterm Exam	10%
Final Exam	10%
Total	**100%**

3.2 Letter Grade Distribution

Grade	Range	Grade	Range
A	>= 92.00	C	72.00 - 77.99
A-	90.00 - 91.99	C-	70.00 - 71.99
B+	88.00 - 89.99	D+	68.00 - 69.99
B	82.00 - 87.99	D	62.00 - 67.99
B-	80.00 - 81.99	D-	60.00 - 61.99
C+	78.00 - 79.99	F	<= 59.99

3.3 Attendance & Participation

Your grade is based on:

- Attendance (taken randomly throughout semester)
- Active participation in class activities
- Completion of in-class and out-of-class activities

Important: Participation activities cannot be made up if missed.

3.4 Assignments

Assignments contain elements of:

- Design
- Coding
- Analysis

SQL coding assignments are submitted to **CodeGrade** via Canvas for instant feedback.

3.5 Project

Group Project where you:

- Compile and utilize a database
- Construct and answer a problem of your own design
- Choose any topic and database type

All deliverables due: End of day, last day of class (Week 15)

Presentations: Final two class sessions

3.6 Exams

Midterm Exam:

- Covers first half of course (Chapters 1-8)
- Date communicated at least one week in advance

Final Exam:

- Comprehensive assessment of all course material
- **Wednesday, May 6th, 8:00 - 11:00 AM**

4 Course Schedule

4.1 Weeks 1-4: Foundations

Week	Topics	Reading
1	Course Overview, First Database, SELECT	Ch 1-2
2	Understanding Data Types	Ch 3
3	Importing/Exporting Data	Ch 4
4	Math and Stats with SQL	Ch 5

Note: MLK Day (Jan 19) - No Class

4.2 Weeks 5-8: Core Concepts

Week	Topics	Reading
5	Joining Tables	Ch 6
6	Designing Tables	Ch 7
7	Grouping and Summarizing	Ch 8
8	**Midterm Exam** (Ch 1-8)	-

Note: Week 6 Wed - Professor out of town

4.3 Weeks 9-12: Advanced Topics

Week	Topics	Reading
9	Inspecting and Modifying Data	Ch 9
10	Dates/Times, Window Functions	Ch 11-12
11	**Spring Break**	-
12	Mining Text	Ch 13

4.4 Weeks 13-16: Specialized Topics & Project

Week	Topics	Reading
13	Spatial Data with PostGIS	Ch 14
14	Web Scraping, Views/Functions/Triggers	Ch 15
15	**Project Presentations**	-
16	**Final Exam** (May 6, 8-11 AM)	-

4.5 Assignment Due Dates

Week	Date	Due
2	Wed, Jan 21	HW 1
3	Wed, Jan 28	HW 2
4	Wed, Feb 4	HW 3
5	Wed, Feb 11	HW 4
7	Wed, Feb 25	HW 5
8	Wed, Mar 4	Midterm
9	Wed, Mar 11	HW 6
10	Wed, Mar 18	HW 7

Week	Date	Due
12	Wed, Apr 1	HW 8
13	Wed, Apr 8	HW 9
14	Wed, Apr 15	HW 10
15	Wed, Apr 22	Project
16	Wed, May 6	Final

5 Course Policies

5.1 Attendance Policy

Consistent attendance is **essential** for your success.

Expectations:

- Attend all classes
- Come prepared and ready to contribute
- Notify instructor of illness or emergency as soon as possible

Attendance tracked through explicit checks or in-class activities.

5.2 Late Work Policy: Participation

Attendance, Participation, & Reading Activities:

- Based on attendance and active participation
- In-class and out-of-class activities contribute to grade
- **Cannot be made up if missed**

5.3 Late Work Policy: Assignments

Assignments must be submitted by the designated due date.

Late Submission Tokens:

- Each student receives **3 tokens** at semester start
- Each token reopens one assignment (regardless of days late)
- Only applies to CodeGrade assignments

5.4 Using Late Tokens

To request a reopen:

1. Navigate to "Assignment Late Tokens" on Canvas
2. Submit a text entry with:
    - Assignment number requesting reopen
    - Date you anticipate completing submission
3. Wait for confirmation before submitting

Use tokens wisely; no additional tokens granted.

5.5 Late Work Policy: Project

All project deliverables due at **end of day on last day of class** (Week 15).

Presentations occur during final two class sessions.

5.6 Incomplete Policy

Incomplete grades granted **only** for:

- Prolonged illness
- Family emergencies removing student from campus for extended time

Not granted for falling behind due to lack of motivation, understanding, or time management.

If concerned about progress, please visit office hours.

5.7 Classroom Conduct

Willamette is committed to creating a constructive and healthy learning community.

Disruptive behaviors include:

- Interrupting others or speaking out of turn
- Distracting the class from subject matter
- Unauthorized recordings or photos
- Any physical threat, harassment, or abusive act

6 Academic Honesty

6.1 Academic Honesty Overview

Cheating includes any form of intellectual dishonesty or misrepresentation.

Plagiarism consists of representing someone else's work as your own.

Penalties range from grade reduction to failing the course.

6.2 Reasonable Actions

These are **allowed**:

- Discussing assignments to clarify requirements
- Discussing solution strategies verbally (no code sharing)
- Whiteboarding solutions (diagrams, pseudocode)
- Referring classmates to helpful resources
- Searching web for general concepts
- Using small code snippets with proper citation
- Working with tutors (all code must be your own)
- Pairs programming during official activities

6.3 Not Reasonable Actions

These are **not allowed**:

- Submitting another student's work as your own
- Copying from another's quiz or exam
- Viewing or copying another student's code
- Copying solutions from previous years
- Asking for or buying solutions
- Sharing code in public forums
- Maintaining public repositories of course solutions

6.4 Use of Generative AI

Reasonable Use:

- Generating ideas or examples
- Clarifying concepts with AI explanations

Not Reasonable Use:

- Copying AI-generated code directly
- Submitting AI-generated work as your own

When in doubt, ask for clarification.

7 Key Willamette Policies

7.1 Inclusive Classroom

I will honor your request to address you by your **affirmed name and pronouns**.

If I inadvertently use incorrect pronouns, please let me know in whatever manner you feel comfortable.

7.2 Time Commitments

Willamette's Credit Hour Policy:

For every hour of class time, expect 2-3 hours of work outside class.

For a class meeting twice weekly, expect **6-9 hours** outside class for:

- Study time
- Reading and homework
- Assignments and research projects
- Group work

7.3 Diversity and Disability

Willamette values diversity and inclusion.

If aspects of this course create barriers to your learning, notify me as soon as possible.

Accessible Education Services:

- Location: Matthews 103
- Phone: 503-370-6737
- Email: accessible-info@willamette.edu

7.4 Additional Support

SOAR Center (Third floor, Putnam University Center):

- Bearcat Pantry (food, toiletries)
- Clothing Share
- First-Generation Book Drive

Contact: soar-center@willamette.edu

7.5 Commitment to Positive Sexual Ethics

Willamette strictly prohibits discrimination, harassment, and sexual misconduct.

As a mandatory reporter, I must report incidents of sexual misconduct to the Title IX Coordinator.

Confidential resources:

- Confidential Advocate: confidential-advocate@willamette.edu
- GRAC: 503-851-4245
- WUTalk (24-hour crisis line): 503-375-5353

7.6 Other Policies

Religious Practice:

Notify instructor within first two weeks if you anticipate conflicts with holy days.

Land Acknowledgement:

We respectfully acknowledge we are gathered on the ancestral land of the Kalapuya people.

Intellectual Property:

Class materials and discussions are for enrolled students only. Unauthorized distribution is prohibited.

8 Key Takeaways

8.1 What You Need to Know

Materials:

- Get the textbook (Practical SQL, 2nd ed.)
- Purchase CodeGrade enrollment key ($35)

Key Dates:

- Midterm: Week 8 (March 4)
- Project Due: Week 15
- Final Exam: May 6, 8:00 - 11:00 AM

Success Tips:

- Attend class consistently
- Use office hours
- Manage your 3 late tokens wisely

8.2 TL;DR?

Contact Information:

Prof. Lucas Cordova

LPCordova@willamette.edu

Office Hours:

Monday & Wednesday

10:30 - 11:30 AM (Salem) | 4:30 - 5:30 PM

Let's have a great semester!