Course Overview and Prerequisites

This course will cover advanced techniques in representing and indexing data in JSON and full-text fields. We will also review and cover the performance of database operations across all types of SQL queries. We also compare and contrast relational and non-relational approaches to database and discuss when to use various different database technologies.

Instructor and Course Assistants

- Instructor: Anthony Wyte (arwhyte@umich.edu Opens in a new tab) --Lecturer IV in Information, School of Information
- Course Team:
    - Derek Bruckner (dbrucknr@umich.edu Opens in a new tab) -- Software Programmer/Analyst Senior and Adjunct Lecturer in Information, School of Information
    - Toby Kemp (tobyk@umich.edu Opens in a new tab) -- Intermittent Lecturer in Information, School of Information
    - Graham Hukill (gshukill@umich.edu Opens in a new tab) -- Intermittent Lecturer in Information, School of Information

Communication Expectations

Contacting instructor and course assistants: Course channel in Slack - siads611_w24_001

Email response time: 24-48 hours

Slack response time: Questions posted on the Slack Channel during the day will be answered by 11PM (Eastern) of the day.

Office hours: see *Course Schedule* below

Textbooks

This book is optional. There are many free online materials covering PostgreSQL that are quite sufficient. Students can get a free electronic copy of this book if they want additional descriptions of the concepts of this course.

1. (Optional) *PostgreSQL: Up and Running (A Practical Guide to the Advanced Open Source Database)*, Regina O. Obe, Leo S. Hsu, ISBN-13: 978-1491963418, ISBN-10: 1491963417

Technology Requirements (unique to this course)

None - All of the work in the course can be done in the provided Jupyter notebook and terminal program. Students can also do the course work on their own computers with the installation of a free PostgreSQL client for their system. Students are provided with an internet-accessible PostgreSQL database server where all the homework can be done.

Accessibility

Screen reader configuration for Jupyter Notebook Content Opens in a new tab

Course Outcomes

1. Be able to use JSON data in Postgres
2. Be able to use full-text data in Postgres
3. Be able to work with text and JSON data in Elasticsearch
4. Be able to connect SQL databases to pandas

Course Schedule

This course begins on **Tuesday, March 5th, and ends on Monday, April 1st, 2024**.

Weekly **Activities, Quizzes, and Programming Assignments** will be due on **Mondays at 11:59 pm** (time zone = Ann Arbor, Michigan - Eastern Time).

Schedule of Weekly Office Hours via Zoom (time zone = Ann Arbor, Michigan - Eastern Time):

- Anthony Whyte: Wednesday, 10-11 am EST
- Graham Hukill: Wednesdays, at 12 pm EST
- Dereck Brukner: Mondays, 8 am EST
- Toby Kemp: Thursdays, 6pm EST

Assignments and Percentage of Final Grade

All assignments and quizzes are worth the same percentage, 5.56%. There are 18 assignments and quizzes total throughout the course.

Note: All assignments are required to earn credit for this course.

Letter Grades, Course Grades, and Late Submission Policy

Refer to the MADS Assignment Submission and Grading Policies Opens in a new tab section of the UMSI Student Handbook (access to Student Orientation course required)

The course grade scale is as follows:

Letter Grade	Percentage
A	93% and above
A-	90% and above
B+	87% and above
B	85% and above
B-	77% and above
C	73% and above
D	70% and above
F	Below 70%

Late assignments will be penalized by 20% times the number of days late. Homework that is late 5 days or more will receive zero credit.

Academic Integrity / Code of Conduct

Refer to the Academic and Professional Integrity Opens in a new tab section of the UMSI Student Handbook (access to Student Orientation course required).

While we offer a number of discussion channels to support your work, if you are stuck **you may not share or receive complete solutions to the assignments.** We also encourage you to support your classmates, but again, without sharing completed code (pointing to resources, describing ideas in pseudo-code, etc. is fine).

Accommodations

Refer to the Accommodations for Students with Disabilities Opens in a new tab section of the UMSI Student Handbook.

Use the Student Application Form in Accommodate Opens in a new tab to begin the process of working with the University's Office of Services for Students with Disabilities.

Help Desk(s): How to get Help

- Degree program questions or general help - umsimadshelp@umich.edu
- Coursera's Technical Support (24/7) - https://learner.coursera.help/ Opens in a new tab

Library Access

Refer to the U-M Library's information sheet Opens in a new tab on accessing library resources from off-campus. For more information regarding library support services, please refer to the U-M Library Resources Opens in a new tab section of the UMSI Student Handbook (access to the Student Orientation course required).

Student Mental Health

Refer to the University's Resources for Stress and Mental Health website Opens in a new tab for a listing of resources for students.

Student Services

Refer to the Introduction to UMSI Student Life Opens in a new tab section of the UMSI Student Handbook (access to the Student Orientation course required).