# Course Syllabus

## Course Overview and Prerequisites

This course will introduce students to beginning and intermediate database concepts. Students will learn the structured query language, the design of data models, loading and normalizing data, how to query databases, and how to measure the performance of various ways of indexing and querying data.

This course has no particular "within MADS" prerequisites. Students should have a solid understanding of programming in Python and be confident in their Python skills.

## Instructor and Course Assistants

- Instructor: Graham Hukill - (gshukill@umich.edu)
- Course Assistant: Derek Bruckner (dbrucknr@umich.edu), Emily Schemanske (landise@umich.edu), Jungseo Lee (jungseo@umich.edu), Toby Kemp (tobyk@umich.edu)

## Communication Expectations

**Contacting instructor and course assistants**: Course channel in Slack
**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

## Course Outcomes

1. Learn the SQL Language

2. Learn relational database design
3. Learn how to load and normalize data in databases
4. Learn how to add indexes for performance
5. Learn about stored procedures
6. Learn Regular Expressions for scanning, parsing, and extracting data

## Course Schedule

This course begins on **Tuesday, September 26, 2023** and ends on **Monday, October 23, 2023.** Weekly Activities, Quizzes, and Programming Assignments will be due on **Mondays at 11:59pm** (time zone = Ann Arbor, Michigan - Eastern Time).

## Office Hours

- Derek Bruckner**: Mondays, 8 - 9 am EST**
- Graham Hukill: **Wednesdays, 12-1 pm EST**
- Emily Schemanske: **Fridays, 8 - 9 am EST**
- Jungseo Lee: **Tuesdays 10:30 - 11:30 am EST**
- Toby Kemp: **Thursdays, 6 - 7 pm EST**

**Assignments and Percentage of Final Grade**
**Grading Formula**

**Percentages are used to calculate a final grade from a learner's graded assessment scores. Learners must pass every graded assessment to pass overall, regardless of their final grade.**

| **Course Assignment** | **Percentage of Final Grade** |
|---|---|
| Initial Server Setup | 5 |
| Making Our First Tables | 5 |
| Inserting Data into a Table | 5 |
| Serial fields / Auto increment | 5 |
| Musical Database / CSV | 5 |
| Week 1: Quiz | 5 |

| | |
|---|---|
| Entering Many-to-One-Data Automobiles | 5 |
| Building a Many-to-Many Roster | 5 |
| Week 2: Quiz | 5 |
| Alter Table | 5 |
| SELECT DISTINCT | 5 |
| Creating a Stored Procedure | 5 |
| Musical Tracks Many-to-One | 5 |
| Unesco Heritage Sites Many-to-One | 5 |
| Musical Track Database Plus Artists | 5 |
| Week 3: Quiz | 5 |
| A Hash-based Puzzle | 5 |
| Regular Expression Queries | 5 |
| Generating Text | 5 |
| Week 4: Quiz | 5 |

| | |
|---|---|
| Total | 100% |

**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 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 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 section of the UMSI Student Handbook (access to the Student Orientation course required).

Use the Student Application Form in Accommodate 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/

## Library Access

Refer to the U-M Library's information sheet on accessing library resources from off-campus. For more information regarding library support services, please refer to the U-M Library Resources 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 for a listing of resources for students.

## Student Services

Refer to the Introduction to UMSI Student Life section of the UMSI Student Handbook (access to the Student Orientation course required).