

Database Engineer (Contract) — Data-Driven Operating Room Scheduling

The University of Manitoba is seeking a Contract Database Engineer to support a funded research project on AI-enabled operating room scheduling for Health Sciences Centre (HSC) Winnipeg. The project requires building a robust SQL database to centralize operating room data, which will power retrospective and prospective machine learning and optimization workflows. The ultimate goal is predicting trauma volumes and surgical durations to improve surgical scheduling, operating room utilization, and access to care.

This contract position is ideal for a data professional with a strong background in database architecture, data engineering, health informatics, computer science, or applied analytics.

Project Background

The project aims to build upon our team's data-driven scheduling capabilities for trauma and elective surgery. The core focus of this role is designing a scalable SQL database, implementing robust ETL (Extract, Transform, Load) pipelines, and structuring datasets to enable accurate predictive modeling for surgical duration and trauma forecasting. The work includes database administration, dataset construction, evaluating model performance, and supporting academic research.

Responsibilities

The Database Engineer will:

- **Design and Build:** Architect, develop, and maintain a centralized SQL relational database tailored for complex operating room, trauma, and clinical operations data.
- **Data Pipelines (ETL):** Develop automated workflows to extract raw data from HSC Winnipeg staff, clean and manipulate it, and load it into the central database.
- **Query Optimization:** Write and optimize complex SQL queries to efficiently generate analysis-ready datasets for the team's prediction and optimization models.
- **Analysis:** Perform applied statistical, machine learning, or operations-focused data preparation to support predictive modeling of surgical durations and trauma arrivals.
- **Collaboration:** Participate in monthly research meetings and provide technical documentation for all database architecture and data pipelines.

Qualifications

Applicants should possess a degree or equivalent professional experience in a relevant field, including but not limited to: Computer Science, Data Science, Health Informatics, Software Engineering, Operations Research, or Biomedical Engineering.

Strong candidates will have proven experience in:

- **Advanced SQL** and relational database design (e.g., PostgreSQL, MySQL, SQL Server)

- **Data Engineering/ETL** pipeline development
- **Python or R** (specifically for data manipulation libraries like Pandas/Tidyverse and database connectivity)
- Data cleaning, validation, and database management
- Working with health administrative or clinical operations data

Experience in designing and deploying SQL databases from scratch in a healthcare or research setting is highly preferred for this contract role.

Contract Details

- **Start date:** Summer or Fall 2026
- **Contract Duration:** Up to 2 years, subject to review and renewal
- **Hours:** 40 hours per week; final schedule and scope of work to be determined upon hiring
- **Location:** Hybrid or Remote; preference for candidates based in Winnipeg or Manitoba
- **Affiliation:** University of Manitoba
- **Compensation:** Competitive hourly or project-based rate, commensurate with experience

The contractor will collaborate closely with faculty from the Max Rady College of Medicine and the Asper School of Business at the University of Manitoba.

Expected Deliverables

In the first six months, the Database Engineer will establish the core SQL database architecture and complete the ETL pipelines required to prepare data for a retrospective study. By the end of Year 1, the database must be fully operational and generating datasets to support a retrospective research paper. Acknowledgment or co-authorship on research publications will be available for contractors who make substantial intellectual contributions to the academic work.

Application Process

Applicants should submit:

- A resume or CV
- A brief cover letter or proposal describing relevant experience in database creation, SQL, and data pipeline development
- *Optional:* A portfolio or links to relevant past database/data engineering projects

Applications will be reviewed until the position is filled.

Please send materials to: pierre.gautreau@umanitoba.ca

Applicants must reside in Canada for the duration of the contract and must be authorized to work in Canada.