

Common Government

New position

Ministry	Advanced Education
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Basic Job Details

Position

Position ID	Position Name (30 characters)	
	Data Modelling Lead	
Requested Class		
Systems Analyst 2		
Job Focus	Supervisory Level	
Corporate Services	02 – Not Supervisory	
Agency (ministry) code	Cost Centre	Program Code: (enter if required)
		N/A

Employee

Employee Name (or Vacant)
Vacant

Organizational Structure

Division, Branch/Unit		Current organizational chart attached?
Strategic & Business Services / Data, Analytics, & Business Services / Data Management & Governance		Yes
Supervisor's Position ID	Supervisor's Position Name (30 characters)	Supervisor's Current Class
	Manager, Data Management	Manager (Zone 2)

Job Duties and Value

Job Purpose and Organizational Context

Why the job exists:

Data Management and Governance (DMG) unit was created to improve the organization's data maturity, as follows:

1. Develop, implement, and evolve enterprise-wide data management and governance.
2. Develop, implement, and evolve stewardship of the Department's major administrative datasets.
3. Collect and provide oversight of key administrative data from the advanced learning system

The Data Modelling Lead contributes to multiple functions of the unit, as follows.

Working with the Manager – Data Management, the Data Modelling Lead develops and implements an enterprise-wide data warehouse to enable Department digital services and business intelligence. This includes developing data models to reliably integrate data from multiple source systems, assessing existing models, and developing a roadmap for model improvement. The Data Modelling Lead manages orchestration, continuous integration/continuous deployment, and the data quality framework within the data warehouse.

The Data Modelling Lead also works with colleagues and management to improve Advanced Education's data management capacity and maturity by teaching concepts and skills, and by establishing processes and standards.

To do this work, the Data Modelling Lead engages data stewards, business owners, and system custodians to discover and improve how data is used for business purposes.

The Data Modelling Lead approaches the work with a systems perspective, develops collaborative environments, and develops others to build a more mature data management culture in the department and the post-secondary system.

The Lead possesses a combination of skills, from technical acumen to well-developed leadership and communication skills. This skill combination is essential for an emerging area of maturity in Advanced Education. The Data Modelling Lead retains an open-minded, collaborative, and listening attitude to help lead this area of change.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

A. Data models are developed to meet Advanced Education's operational and analytic needs.

1. Identify requirements to support one or more data products by collaborating with data scientists, subject-matter experts, and business users
2. Develop reusable table structures to integrate data from one or more sources to support data products.
 - On the simpler end, develop a data model integrating 2-3 sources to support a small suite of dashboards for at least one year.
 - On the more complex end, oversee development on multiple layers in the data warehouse or across multiple teams.
3. Ensure the model is successfully put into production by collaborating with the extended development team.
4. Ensure data models are documented, maintained, and improved to meet business needs.
5. Discover and decipher legacy documentation of data structures and movement in AE data systems, working with business and IT colleagues.
6. Manage orchestration and continuous integration/continuous deployment within the data warehouse.
7. Create and manage the data quality framework within the data warehouse.

B. Best practices guide model development and planning.

1. Own and drive Advanced Education's data modeling standards, developing documentation and processes to support junior and future modellers in the unit.
2. Prioritize upgrades to supported models and data products, taking in to account department business priorities, technical dependencies, and unit coordination and capacity.
3. Develop and maintain a roadmap for development and improvement of models and standards.
4. Build a library of data modelling documentation and resources for unit and Department staff.

C. Data engineering and data reporting functions are backed up.

1. Cross train with data engineering and reporting colleagues to ensure business continuity.
2. Draft, test, and review data pipeline scripts.
3. Develop and maintain pipeline documentation including standards.

4. Draft and review reports, visualizations, and dashboards.
5. Develop and maintain reporting and visualization documentation including standards.

D. Advanced Education improves data operations capacity and data management maturity.

1. Support unit staff to develop modelling skills including teaching the basics, guiding junior modellers through complex cases, and validating that models work as intended.
2. Support unit and department colleagues to read and understand data modelling documentation.
3. Support the Manager and Director to develop and hire to additional modelling positions as needed.
4. Help to develop and socialize with colleagues and stakeholders an evolving data management framework and ongoing data operations functions, roles, and systems.
5. Support the Manager and Director to prepare briefings and presentations about data management and governance.

Problem solving

Typical problems solved:

The Data Modelling Lead must meet a wide range of challenges, from granular, technical problems to chronic, systemic culture issues. Examples include the following:

- *change*: Advanced Education is maturing as an information organization. The Data Modelling Lead will face resistance from inside and outside the organization, and must find ways to ease concerns and rally colleagues and stakeholders to the cause.
- *opposing needs*: The Data Modelling Lead works with many individuals and groups across the organization, serving as a critical diplomat in brokering agreement among colleagues with conflicting needs and priorities. An enterprise view is essential in solving such problems.
- *complex problems*: When things go wrong in data management, the causes are often complex. The Data Modelling Lead will have the tenacity to tackle these issues and see them through to their conclusion, marshalling resources as needed.
- *working in an emergent space*: The organization knows it needs to improve data management, but not always what that means. The Data Modelling Lead is always looking for ways to improve policies and procedures, and to provide better service. When clear direction is not forthcoming, the Lead imagines new ways to add value.

Types of guidance available for problem solving:

The Data Modelling Lead works within the policies and guidelines set by Cabinet, Treasury Board, the Minister, the Deputy Minister, and legislation including the *Post-secondary Learning Act* and the *Freedom of Information and Protection of Privacy Act*.

However, data management is a new function in Advanced Education, and to a large degree in the Government of Alberta. The Data Modelling Lead discovers and develops best practices that are effective for the Department, and seeks to positively influence development of data management policy.

The Manager provides guidance to the Data Modelling Lead in setting priorities and determining outcomes. Within these parameters, the Lead has extremely high autonomy and authority to determine work priorities and approaches.

Direct or indirect impact of decisions

Working with the Manager, the Data Modelling Lead ensures excellent data models, standards, documentation, facilitation, and teaching, and is accountable for resolving issues that arise in pursuit of that goal. The position

has the freedom to develop and implement solutions aligned with the Department's data management and strategic objectives. The position is expected to act independently to ensure a coordinated approach at the department level.

The role has a significant impact on the Department's core business functions which all depend on the quality, availability, and usability of data. For example, these data feed metrics in post-secondary institution funding agreements (Investment Management Agreements) and in the Department business plan. Additionally, these data form the content of the Department's digital services for students, learning providers, and employers (services currently being created under the Department's Digital Strategy - a priority initiative).

In this way, the position has significant direct influence on business areas and stakeholders that generate and use Department data.

Key relationships

<i>Contact</i>	<i>Frequency</i>	<i>Purpose</i>
Data engineers: those who build the data pipelines moving data into models.	Daily to Weekly	Engagement and problem-solving to develop and maintain data models
Business areas: for each dataset and digital service, expert staff who understand and depend on the data and its systems	Daily to Weekly	Engagement and problem-solving to develop and maintain data models
Digital Services staff: product owners, IT contractors, data architects, data consultants	Daily to Weekly	Engagement and problem-solving to provide data as digital services are developed
IT colleagues: staff who understand and maintain data systems, including DevOps managers, enterprise architects, data architects, application owners groups	Daily to Weekly	Problem-solving, coordination, and strategy to deploy, maintain, and fix problems with data flows and models
Users/Consumers: Department, GoA, stakeholders, public	Daily to Monthly	Service delivery, use cases
Governance bodies: GoA- and department-level data management bodies	Monthly to Quarterly	Guidance, coordination, strategy, decision-making
Executive: Executive Director Council, Executive Team	Ad hoc	Approvals
External: national bodies (e.g., Statistics Canada, Council of Ministers of Education Canada), external contractors	Ad hoc	Coordination, learning

Required Education, Experience, and Technical Competencies

<i>Education level</i>	<i>Focus/Major</i>	<i>2nd Major/minor if applicable</i>	<i>Designation</i>
Undergraduate degree*	Other	N/A	N/A

*Four years of experience performing similar integrations will be considered equivalent to a four-year degree.

If other, specify

Other related: Computer Science, Data Science, Statistics, Informatics, Information Systems or another quantitative field.

Job-specific experience, technical competencies, certification and/or training

The Data Modelling Lead must have at least four years of experience performing the following work:

- developing SQL scripts to integrate data from multiple sources to support reporting, application development or similar data products.
- using databases (MySQL, SQL Server, Snowflake, Redshift, BigQuery, Oracle, Postgres) to support reporting, application development or similar data products.

Data modelling

These skills and experience are essential:

- A very strong working knowledge of structured query language (SQL), including the ability to write and troubleshoot complex scripts. (Multiple dialects are welcome.)
- Development experience with one or more data models.
- Experience with version control systems (GitHub): branching, writing and saving code, creating pull requests, doing pull requests for code reviews.
- Experience with Linux operating system: navigate directories, move and copy files.
- Experience with command-line interfaces to other systems (Github, DBT, Astronomer).
- Familiarity with the programming language Python.
- Familiarity with multiple brands of database, enterprise resource planning (ERP), and customer relationship management (CRM) systems.

These skills and experience are desirable:

- Knowledge of the Data Build Tool (DBT) library.
- Experience with extract-transform-load (ETL) tools such as Informatica and SSIS or Python-based orchestration platforms such as Airflow and DataBricks.
- Experience with agile delivery approaches such as DataOps, CI/CD, or DevOps.
- Experience with data science or data engineering.
- Practical experience with visualization tools such as Tableau, SiSense, or SSRS.

Data management and governance

- Best practices in data management and governance, including the Data Management Body of Knowledge (DAMA-DMBOK) and Government of Alberta standards and policies.
 - Data management organization and roles
 - Data operations
 - Metadata and reference data management
 - Data quality management

Advanced Education and the advanced learning system

- Government and ministry strategic direction for and current issues affecting data management and governance (for example, IT strategic planning, the Department's Digital Strategy)
- Department data systems, IT support structures, and IT projects
- Department structure, operations, and programs; Alberta's advanced learning system (providers, sectors, governance)

- Concepts related to learning delivery, measurement, credentials, etc.: for example, off-campus, full-load equivalent, university transfer
- Relevant legislation and regulations (for example, the *Post-Secondary Learning Act* and the *Freedom of Information Protection and Privacy Act*)

Change management

- Change management principles and their application

Behavioural Competencies

Competency	Level	Definition	Examples of how this level best represents the job
Systems Thinking	B	<p>Considers the inter-relationships among different aspects of an approach including how they relate to other programs or areas.</p> <p>Seeks insight about the implications of different options from both a people and organizational perspective.</p> <p>Identifies unintended consequences of a plan.</p>	<p>Understands and acts with an awareness of the many stakeholders involved in data management across the department's business areas and IT supports.</p> <p>Seeks to understand data needs and uses from multiple perspectives: business, technical, enterprise.</p> <p>Thinks through effects of data-related changes.</p>
Creative Problem Solving	B	<p>Asks questions to get a deeper understanding of the present issue.</p> <p>Looks for ways to improve activities and results by doing something that may be new and different in the organization</p>	<p>Asks the right questions to deepen understanding of human, business, and IT issues.</p> <p>Imagines new ways of doing work and adding value, seeking to automate where appropriate.</p>
Drive for Results	B	<p>Identifies ways to exceed performance expectations. This may involve identifying potential efficiencies, different ways of working, or opportunities to contribute to the work of others.</p>	<p>Focuses on outcomes of data work, planning for deliverables and looking for opportunities to add value.</p>
Develop Networks	B	<p>Identifies key stakeholder contacts in the organization with whom a relationship must be established.</p> <p>Actively supports the interests of colleagues, clients and stakeholders by making choices and setting priorities that incorporate their needs.</p>	<p>Connects with key business and IT contacts to understand their needs and constraints, and to ensure a focus on meaningful data outcomes for the organization.</p>

Benchmarks

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Ropin' the Web Systems Analyst