MAPPING CALGARY'S DIGITAL FUTURE

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A BRIEF FOR EDUCATORS

Tech is taking off in Calgary! With that growth comes a **demand for new skills** and competencies.

A recent study by ICTC and Calgary Economic Development identified a number of **high tech occupations seeing a strong demand** for skilled talent.

Surveying nearly 200 of **Calgary's employers across sectors including ICT, digital media, oil & gas, clean tech, and others**, the following occupations were identified as most in demand in the city:

1) **Software Developer**
2) **Data Scientist**
3) **Data Analyst**
4) **Full Stack Developer**
5) **UX/UI Designer**
6) **QA Tester**
7) **Project Manager**
8) **Business Development Manager**

These occupations come with a variety of in-demand digital/technical "hard" and interpersonal "soft" skills.
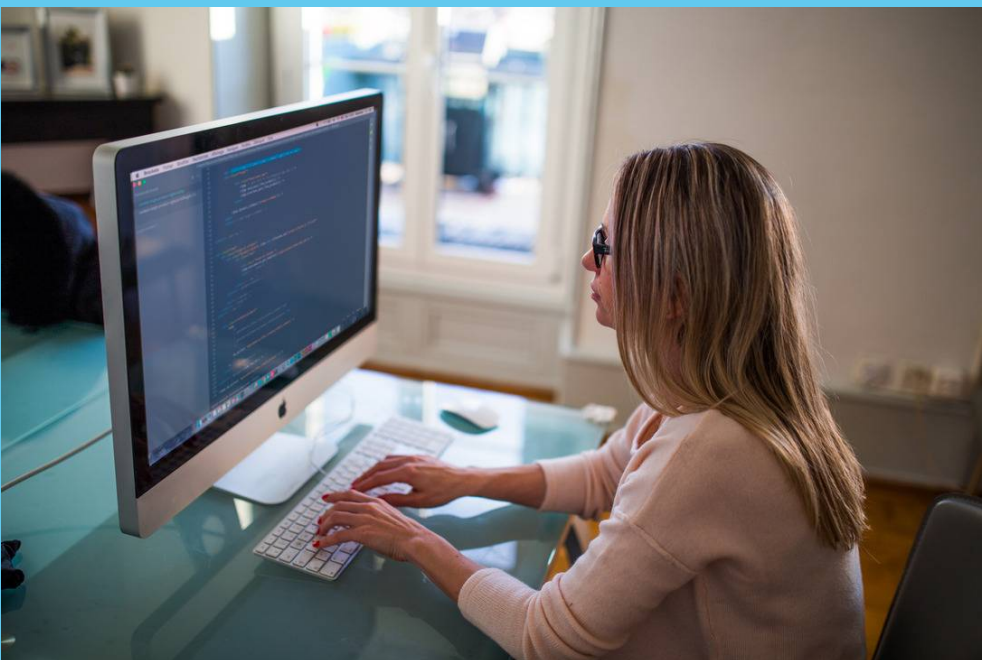
Find out more about Calgary's top jobs and their in-demand skills to help guide curriculum development and ensure the success of future graduates in the city!

For more information,
have a look at the
**Mapping Calgary's
Digital Future report.**

IN-DEMAND JOB: SOFTWARE DEVELOPER

Key Hard Skills

- Understanding of **data structures, algorithms** and **logic-based programming.**
- Experience with **software development principles and practices,** like: minimum viable products, pair programming, testing pyramids.
- Experience with **Agile Methodology.**
- Experience with **cloud computing platforms like AWS,** and **Microsoft Azure.**
- Experience with **test development** practices.
- Proficiency with **modern programming languages** such as **C#,** Java, **JavaScript, Python, SQL,** and **Ruby on Rails.**
- Knowledge of **build automation tools** like **Jenkins, Bamboo,** and **Apache Maven.**
- Proficiency with **version control/continuous integration** tools like **Helix Core, GitHub, Apache Subversion, Mercurial.**
- Experience with **building and using APIs,** including functions nested within APIs.

Key Soft Skills

- Excellent **project management skills,** with the ability to track project progress.
- Ability to **prioritize tasks, analyze user needs** and **create workflows.**
- Ability to work independently or in groups.
- Strong analytical and **strategic thinking skills.**
- Strong oral and written **communication skills.**
- Demonstrated ability to **understand needs from the business' perspectives.**
- Excellent **time management skills,** with the ability to meet tight deadlines.

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IN-DEMAND JOB: DATA SCIENTIST

Key Hard Skills

- Knowledge of data science practices like **automation**, and **algorithms**.
- Strong understanding of **machine learning** terminology and practices.
- Experience with **Agile Methodology.**
- A strong understanding of **mathematics** and **descriptive statistics**.
- Ability to look for **patterns and trends in data**, creating **models** to extract results.
- Ability to utilize **machine learning** to develop and **automate models.**
- Strong understanding of **modern programming languages** for data science applications such as **Python, Java, SQL, C, Scala.**
- Knowledge and experience with data and **database management**, including proficiency with tools such as **Hadoop** and **Apache Spark.**

Key Soft Skills

- Excellent **project management skills**, with the ability to track project progress.
- Ability to **prioritize tasks**, analyze user needs and **create workflows**.
- Ability to **work independently and in groups**.
- Strong analytical and **strategic thinking skills**.
- Strong oral and written **communication skills**.
- High **attention to detail**.
- Demonstrated ability to **understand projects from business' perspective**.
- High level of **flexibility and adaptability**.
- Excellent **time management skills**, with the ability to meet tight deadlines.

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IN-DEMAND JOB: DATA ANALYST

Key Hard Skills

- Knowledge of data analysis principles and practices including **data gathering, data cleaning, data analysis** and **trend extraction.**
- Experience with **Agile Methodology.**
- A strong understanding of **statistical analysis** and modeling principles like **correlations, variance analyses, factor analyses, regression analyses.**
- Ability to spot patterns, and define **data collection** and **analysis processes.**
- Ability to effectively **sort unstructured data** such as videos, customer reviews, social media posts, audio files.
- Ability to utilize **natural language processing** and **text mining** to perform **sentiment analysis** on data and quantify subjective information.
- Ability to **automate data analysis practices.**
- Strong understanding of modern scripting languages like **Python, R, SQL.**
- Knowledge of data and **database management**, including proficiency with tools such as **Hadoop** and **Apache Spark.**
- Ability to develop **data visualizations** using **Tableau, Microsoft PowerBI, DJ3.js.**

Key Soft Skills

- Strong **problem-solving skills** and ability to prioritize tasks.
- Strong **analytical skills,** with the ability to **collect,** and **analyze data.**
- High **attention to detail.**
- Excellent communication skills, with the ability to **dissect technical data.**
- Strong **presentation skills,** with the ability to produce clear visuals of data.
- Advanced **investigative skills,** showing creativity in the data extraction process.
- High level of **flexibility and adaptability.**
- Ability to **describe complex data** and outcomes in everyday language.

IN-DEMAND JOB: FULL STACK DEVELOPER

Key Hard Skills

- Experience with **Agile Methodology.**
- Understanding of the **software development life-cycle.**
- Knowledge of **full stack development principles** such as **back-end** (source code development, database management, business logic, database interaction) and **front-end** (user interface development, testing and debugging, creating responsive designs) practices.
- Knowledge of **modern programming languages** including **HTLM, CSS, JavaScript, Python, Ruby on Rails, PHP, and Node.js.**
- Strong understanding of **user experience principles** and practices, including accessibility guidelines.
- Experience with **cloud computing processes** like backup and recovery.
- Proficiency with **version control/continuous integration** tools like **CVS, Git.**
- Strong **data management** skills.
- Ability to **manage databases** using tools like **MySQL, MongoDB,** and **Cassandra.**

Key Soft Skills

- Strong **project management skills,** with the ability to compartmentalize tasks .
- Excellent **communication skills** with the ability to explain technical processes and **work cross-functionally** with other parts of organizations such as marketing and sales.
- High level of **flexibility,** with the ability to adapt to change rapidly.
- Strong **analytical and problem-solving** skills.
- Strong **business acumen,** understanding business needs and make recommendations.
- Ability to **work independently,** while **collaborating with a team.**
- High degree of **open-mindedness and creativity,** with the ability to combine technical needs and best practices for enhanced user experiences.

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IN-DEMAND JOB: UX/UI DESIGNER

Key Hard Skills

- **Strong understanding of User Experience and User Interface principles** and practices including the ability to assess usefulness, usability, ease in navigation.
- **Experience with Agile Methodology.**
- **Strong understanding of web principles and standards.**
- **Strong understanding of marketing principles such as market-focused strategies.**
- **Experience with modern design platforms like Adobe InDesign, Dreamweaver.**
- **Ability to design static high-profile wireframes.**
- **The ability to use wireframes to create high-quality mockups.**
- **Proficiency with modern cloud computing platforms like AWS, Microsoft Azure.**
- **Knowledge of web development tools like jQuery, Twitter Bootstrap, Angular.js.**
- **Experience creating user interfaces and designs for mobile devices.**
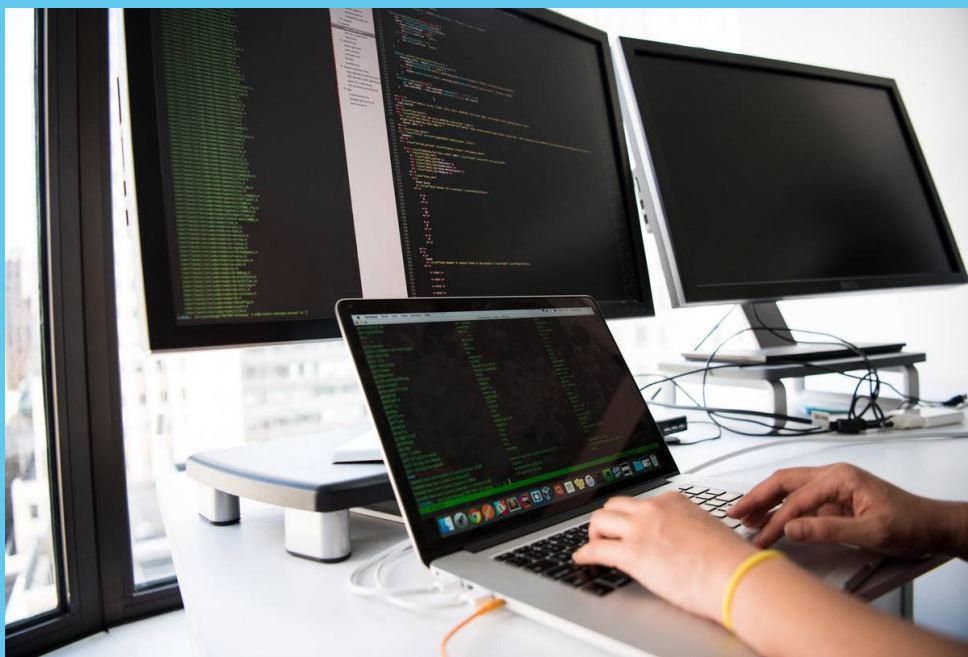- **Experience measuring and tracking usability metrics based on user performance.**

Key Soft Skills

- **Strong sense of creativity and trend analysis,** with the ability to stay abreast with competitive **UX-techniques** like **eye movement tracking,** field studies, **usability testing** .
- **Exceptional communication skills,** with the ability to **explain technical concepts** and best practices to clients and customers.
- **Strong customer relations skills** to quickly solve problems and suggest solutions.
- **Ability to lead projects** and suggest practical solutions to management.
- **Creative and empathetic,** considering situations from multiple perspectives.
- **Ability to implement feedback** and seek continuous design improvement.

IN-DEMAND JOB: QA TESTER

Key Hard Skills

- Proficiency with **QA testing principles and practices** like unit testing, integration testing, system testing, performance testing.
- Experience with **Agile Methodology.**
- Ability to run specification-based, structure-based, and **experience-based tests.**
- Proficiency with **automated testing principles and techniques.**
- Ability to **measure and track QA performance** metrics such as the number of defects when new features are introduced, or time taken to execute commands.
- Ability to work with **automated testing tools** like **Selenium, Katalon Studio, Watir.**
- Experience with **bug tracking** practices, like bug reporting workflows, bug assigning, and creating bug reports.
- Proficiency with **tracking tools** such as **Intervals, Monday, Aceproject, Wrike.**
- Knowledge of **version control/continuous integration** practices.
- Experience with **software quality assurance.**

Key Soft Skills

- Ability to **create clear test plans** based on verbal communications and client needs.
- Strong **communication skills,** both written and verbal.
- High **attention to detail,** with the ability to write detailed **documentation of tests.**
- Strong **problem-solving skills,** with the ability to solve complex problems.
- Excellent **team-working skills,** with the ability to collaborate with developers and other team members to **troubleshoot issues.**
- Strong **project management skills,** with the ability to shape test plans, and track tests.
- High degree of **flexibility,** with the ability to adapt to changing needs and priorities.

IN-DEMAND JOB: PROJECT MANAGER

Key Hard Skills

- Experience with **project planning, documentation and delivery.**
- Experience with **project planning software** like **Microsoft Access and Project.**
- Experience with **budget planning and compliance.**
- Experience with **budget planning software** like **SAP, Quickbooks, SAGE.**
- Understanding of **business analytics** and milestones.

Key Soft Skills

- Strong **leaderships skills.**
- Strong **management skills,** with the ability to **manage timelines and staff.**
- Strong **skill assessment capabilities,** with the ability to properly **delegate work.**
- High **attention to detail.**
- Strong **team building skills.**
- Excellent oral and verbal **communication skills.**
- Strong **conflict management skills.**

IN-DEMAND JOB: BUSINESS DEVELOPMENT MANAGER

Key Hard Skills

- Deep **domain knowledge** of the tech sector.
- Expert **sales and business development skills**.
- Strong **client and stakeholder management** skills.
- Strong **negotiation skills**.
- Strong **diplomacy skills**.
- Ability to **write proposals, concept papers, and deliver pitches**.
- Strong **knowledge of marketing, market analytics, and social media**.
- Experience with **marketing campaign software** and applications like **Hootsuite, Slack, LinkedIn, Twitter**.
- Experience with **CRM** and **project tracking software**.
- Proficiency with software like **SAP CRM, Salesforce, PersistIQ, Spirio**.

Key Soft Skills

- Strong **networking skills**.
- Excellent oral and written **communication skills**.
- **Creativity** and open-mindedness.
- Strong **problem-solving skills**.
- Strong sense of **empathy**.
- Ability to **work collaboratively**.
- Strong ability to **build and maintain relationships**.
- Excellent time **management and organizational skills**.
- Excellent research and **strategic analysis skills**.