FULL-TIME | WINNIPEG LOCATIONS

2: Data Science and Machine Learning

Overview

- **Two year diploma program**
- **August and January entry dates (Please note: Some classes in the January intake will run in the evening)**
- **Exchange District Campus, Winnipeg**
- **Mandatory Work Integrated Learning term (Co-op work experience or industry project)**
- **Classes take place between 8 am and 6 pm**
- **Classes are held on campus on Mondays, Tuesdays, and Wednesday mornings and online on Wednesday afternoons, Thursdays, and Fridays**
- **You need to provide your own laptop computer that meets the requirements for the program**
- **International applicants please visit Academic Program, Dates and Fees for a listing of programs for international students, current availability and online application instructions.**

Description:
Recent advancements in computer hardware and machine learning algorithms have driven a rapid growth in the use of data science and machine learning across all economic sectors, with applications in robotics and automation, healthcare, finance, and government. Because of this, there is now a huge demand for developers and data analysts with skills and experience in these fields. In the Data Science and Machine Learning program, you will:

- **Study the fundamental concepts in mathematics and statistics that make these technologies possible.**
- **Gain the skills to collect / organize data and use analytics to inform decisions.**
- **Implement current machine learning algorithms to address common needs in industry.**
- **Develop the skills to effectively communicate technical ideas with other developers as well as those without technical knowledge.**
- **Experience working with industry to develop code for real applications in data science and machine learning.**

Graduate Profile:

By the end of the program a Data Science and Machine Learning graduate should be able to:

- **Determine appropriate machine learning techniques based on the problem domain data and identified goals.**
- **Determine programming language appropriate to the goal or project.**
- **Conduct research by completing a literature review, collaborating with others and using other research techniques as required to acquire data, domain knowledge and summarize existing approaches and techniques in a domain area.**
- **Train industry standard machine learning models to establish predictive relationships between data inputs and desired outputs that remain effective and accurate when presented with new unseen data.**
- **Prepare data for use in machine learning models through data revision and quality improvement in order to interpret and draw conclusions from statistical analysis of visualized and contextualized data.**
- **Create a software product that uses machine learning and software development skills appropriate to identified goals.**
- **Verify and validate a software product to ensure that it meets specifications and fulfills its intended purpose.**
- **Communicate effectively in all interactions by using active listening as well as written, verbal and non-verbal communication skills (power skills), reading technical literature and documentation of processes.**
- **Manage data in compliance with regulatory standards through continuous learning from regulatory bodies and ethical behavior.**
- **Demonstrate professionalism, personal integrity and accountability in all roles and responsibilities, maintaining professional and ethical standards and accreditation as necessary.**

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Data Science and Machine Learning

Locations, Dates and Fees

Costs (estimates only; subject to change)

Program/Student Fees

Year 1

$15,413.00

Year 2

$9,615.00

Books and Supplies

Year 1

$2,000.00[1]

Year 2

$150.00

Program/Student Fees for International

Year 1

$21,827.00

Year 2

$16,795.00

[1]Includes an estimate of $1600 for the purchase of a laptop

Students may apply for financial assistance through the Manitoba Student Aid program. For general information on applying please call 204-945-6321 or 1-800-204-1685, or visit their website at www.manitobastudentaid.ca, which also includes an online application. For detailed information, please visit one of the RRC Polytech Student Service Centres or call 204-632-2327. Applicants requiring financial assistance should complete their student loan applications well in advance of the class start date.

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Data Science and Machine Learning

Courses and Descriptions

(Click the course name to view the description of the course)

Year 1

Term 1:

Credit Hours

COMM-1173Communication Strategies 3

COMP-1296Introduction to Programming Logic 6

COMP-1702Introduction to Data Science and Machine Learning 6

MATH-1202Statistics for Data Science and Machine Learning 6

MATH-1204Linear Algebra for Data Science and Machine Learning 6

Term 2:

Credit Hours

COMM-2172Communication for the Workplace 3

COMP-1701Transforming Data Into Databases 6

COMP-2040Python Essentials With Data Analysis 6

COMP-2702Data Management 6

COMP-2704Supervised Machine Learning 6

Year 2

Term 3:

Credit Hours

COMM-2176 Communication for Systems and Innovative Thinking **3**

COMP-3703 Introduction to Artificial Intelligence **6**

COMP-3705 Unsupervised Machine Learning **6**

Electives

COMP-2036 Introduction to Bioinformatics **6**

COMP-3702 Information and Data Architecture **6**

COMP-3704 Neural Networks and Deep Learning **6**

COMP-3706 Robotics and Automation **6**

Term 4:

Credit Hours

Electives

COOP-4001 Data Science and Machine Learning Co-op **6**

PROJ-4001 Data Science and Machine Learning Industry Project **6**

Data Science and Machine Learning

Graduation Requirements

To graduate, students need to meet these requirements:

- **A minimum overall program GPA of 2.0 (as per RRC Policy A12)**
- **A minimum passing course grade requirement of D (50%)**
- **Students need to complete all compulsory courses**

To graduate from Data Science and Machine Learning, all students must complete a total of 14.5 full-course equivalents and one term of Work Integrated Learning for a total of 87 credit hours within six years of the date of your initial enrolment. You are responsible for ensuring you take the appropriate courses to meet the requirements for graduation.

Basic Requirements

Computer/Laptop Requirements

You need a laptop computer that meets the specifications for the program. These requirements are higher than for other programs at RRC Polytech, so you need to review them before purchasing your computer.

Please review the requirements
at https://catalogue.rrc.ca/files/File/catalogue/LaptopandInternetSpecsACE.pdf.

You need to bring your laptop to all classes that take place on campus. The College provides free high-speed internet access on campus. For online classes, you are responsible for your own high speed internet connection.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) is a process which documents and compares an individual's prior learning gained from prior education, work and life experiences and personal study to the learning outcomes in college courses/programs. For more information, please visit www.rrc.ca/rpl.