RRC POLYTECH Program and Course Catalogue

FULL-TIME | WINNIPEG LOCATIONS

Game Development - Programming

Overview

- Two-year advanced diploma
- Work Integrated Learning experience
- September entry date
- Manitou a bi Bii daziigae, Exchange District Campus, Winnipeg
- Annual application deadline: April 30
- Competitive admission program

Game Development is focused on providing graduates with the skill sets needed to pursue careers in video game development. A foundational pillar of this program is to solve creative and technical challenges in a collaborative team-based environment, allowing students to build a relevant portfolio of work showcasing their skills. To learn about games, we make games!

Work Integrated Learning

Students will participate in a 12 week Work Integrated Learning term in their field of study. Co-operative education integrates classroom theory with related on-the-job-training by alternating terms of academic study and employment. It allows the student to gain valuable industry experience, make industry contacts, and attain a competitive advantage for job search upon graduation. The student will also gain practical knowledge about the workplace environment, including expectations, behaviours and ethics required to be successful.

For information on the program contact Chris Brower at cbrower@rrc.ca.

Graduate Profile

The Game Development advanced diploma graduate will learn to:

1. Create, edit and present game productions as part of a team while cultivating respectful and productive working relationships

2. Research, interpret and apply information to enhance project outcomes

3. Tell stories and create game projects

4. Create and edit game-ready assets

5. Create documents to meet game development objectives

6. Think critically, self-manage and learn independently

7. Manage projects by interacting with stakeholders while respecting timelines, workflow and production schedules

8. Demonstrate industry-ready skills in the chosen specialization streams of Game Art or Game Programming

9. Showcase abilities through professional portfolios, presentations, projects and work experience

Admission Requirements

Your Academic History

If your academic history includes any of the following, please visit My Education for important information: post-secondary studies at an institution other than Red River College Polytechnic; Modified (M), English as an Additional Language (E), or GED high school courses; or home schooling; international secondary (high school) studies.

The college requires transcripts verifying your complete academic history including any public or private high school, college, university, or technical institute you have attended.

Please check the Program Overview page, to see if this program is for Manitoba residents only.

DOCUMENT SUBMISSION

Upload Through Your Future Student Account

- Scan your document(s) and save the file. Ensure you keep your original documents as the College may request to see them at any time.
- Go to apply.rrc.ca and log in.
- Click on your application, then Supplemental Items & Documents.

If you do not have a Future Student Account or require assistance, please contact our Student Service Centre at 204-632-2327.

Internationally Educated Applicants - visit www.rrc.ca/credentials for credential assessment information.

Submission of required documentation indicating proof of completion of admission requirements is due within 15 days of applying unless otherwise noted in the program's admission requirements.

This is a competitive admission program. Your portfolio will be evaluated and assigned a score that reflects your potential for success in the program. If your portfolio score does not fall within the acceptable range, your application will be cancelled.

Offers of admittance will be made to qualified applicants based on portfolio scores in descending order until all available seats are filled. This means not all applicants whose portfolios scores fall within acceptable range will be offered a seat.

Applicants not offered a seat may reapply for a future intake by submitting a new application, application fee, and new portfolio based on the portfolio specifications for that application year.

Admission priority for this program is:

1. Red River College students currently enrolled in the Application Development and Delivery, Data Science and Machine Learning or IT Operations program.
2. Manitoba residents who are Canadian Citizens or Landed Immigrants
3. All others

Annual application deadline: April 30

Regular Admission Requirements

1. Grade 12
    - Submit proof of:
        - Submit proof of graduation from or enrolment in Grade 12
        - If you provide proof of enrolment at time of application, your official final grades indicating successful completion must be submitted by July 15 for fall enrolment or by the deadline specified in your admission letter

- *and*

2. English Language Requirements (ELRs)
   - Answer this question to determine if you meet this program's ELRs:
     Have I successfully completed 3 years of full-time high school (secondary) education in Canada, the United States, or an ELR exempt country where English was the language of instruction?
     - If YES, you meet English language requirements. Apply and then submit your transcripts* for review
       or
     - If NO, submit proof of meeting an ELRs option. If you choose the English language assessment option, review this program's approved assessments and required levels.
       or
     - If you completed all of your education in Canada, the United States, or an ELR exempt country in English but you did not graduate high school, submit your transcripts* for review.
   - * If your transcripts are from the USA or an ELR exempt country, we will assess an International Credentials Assessment Fee to be paid before your transcripts will be reviewed.
     and
3. Portfolio
   - Submit a portfolio
   - This item is not due within 15 days of applying and will be requested by the College at a later date.

Mature Admission Requirements
If you are 19 years of age or older and have been out of high school for a minimum of one year at time of application, and you do not meet the regular admission requirements, you may apply under the Mature Student admission requirements:

1. Portfolio
   - Submit a portfolio
   - This item is not due within 15 days of applying and will be requested by the College at a later date.

English Language Assessments

⚠ The College reserves the right to modify this information without notice or prejudice.
ASSESSMENT RESULTS MUST BE DATED NO MORE THAN TWO YEARS PRIOR TO YOUR APPLICATION DATE!

Approved English Language Assessments

English Language Assessment	Minimum Scores for Certificates, Diplomas and Advanced Diplomas, and Post Graduate Certificates, Post-graduate Diplomas	Minimum Scores for Bachelor Degrees and Creative Communication
CAEL Online or In-Person	Overall band score of 60	Overall band score of 70 and Writing of 60
IELTS Academic Level	Overall 6.0 and No band below 5.5	Overall 6.5 and No band below 6.0
Password Skills	Overall 6.0 and No band below 5.5	Overall 6.5 and No band below 6.0
LINC Certificate	7	8

English Language Assessment	Minimum Scores for Certificates, Diplomas and Advanced Diplomas, and Post Graduate Certificates, Post-graduate Diplomas	Minimum Scores for Bachelor Degrees and Creative Communication
Duolingo Language Test	115 and above+ with a min. of 95 in each section	125 and above with a min. of 100 in each section
New English for Academic and Professional Purposes	Successful completion of the program 5 (min 70%)	Successful completion of the program 5 (min 70%)
PTE	54 overall Min 50 in each skill	60 overall Min 55 in each skill band
TOEFL-ibt Academic Level	80 (20L, 20S, 19R, 21W)	90 (22L, 22S, 22R, 24W)
Academic English Program for University and College Entrance Program (AEPUCE)	Successful Completion	Successful Completion
CELBAN	N/A	N/A

Who Should Enrol?

The Game Development Programming course is designed for applicants that have an introductory base of computer programming experience. You should apply for this program if four or more of the following statements applies to your level of IT, programming, and math experience:

1. You are comfortable installing applications and performing basic operating system configuration on a laptop or desktop PC.
2. You have taken one or more computer programming courses online or in person at a high school or college/university level.
3. Without assistance, you can write a computer program that involves variables, decision statements, loops, and functions to solve a simple problem or to carry out a small task.
4. Without assistance, you can write a computer program that uses objects, arrays, and user interactions to solve a complex problem or to carry out a set of tasks.
5. In high school you completed a grade 12 math course with a grade of 70% or higher.

Locations, Dates and Fees

Next Estimated Term 1 Start Date (subject to change)

Location	Start Date	
Manitou a bi Bii daziigae	Aug 31, 2026	Apply Now

Costs (estimates only; subject to change)

Program/Student Fees	
Year 1	$11,318.00
Year 2	$10,303.00
Other Fees	
Year 1	$460.00[1]
Program/Student Fees (International)	
Year 1	$21,083.00
Year 2	$19,543.00

[1] The following supplies are recommended: Full-size headphones (ear bud type not recommended) - $150, Minimum 1TB External Hard Drive (Samsung SSD T5 1TB model recommended) - $180, Webcam and Microphone - $130

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.

Courses and Descriptions

Year 1	
Term 1	**Credit Hours**
COMM-3065 Development and Narrative Design 1	3
COMP-3010 Software Development and Documentation 1	3
COMP-3015 Programming 1	6
DMMT-3010 Game Studio 1	6
MATH-3009 Applied Mathematics for Games 1	3
MGMT-3016 Game Business Management 1	3
Term 2	**Credit Hours**
COMM-4065 Development and Narrative Design 2	3
COMP-4010 Software Development and Documentation 2	3
COMP-4015 Programming 2	6
DMMT-4010 Game Studio 2	6
MATH-4009 Applied Mathematics for Games 2	3
MGMT-4016 Game Business Management 2	3
Year 2	
Term 3	**Credit Hours**
COMM-5065 Development and Narrative Design 3	3
COMP-5015 Programming 3	6

DMMT-3012
Game Development 1
3

DMMT-5010
Game Studio 3
6

MATH-5009
Applied Mathematics for Games 3
3

MGMT-5016
Game Business Management 3
3

Term 4Credit Hours

COMM-6065
Development and Narrative Design 4
3

COMP-6015
Programming 4
6

DMMT-3013
Modern Tech in Games
3

DMMT-4012
Game Development 2
3

DMMT-6010
Game Studio 4
6

MGMT-6016
Game Business Management 4
3

Term 5Credit Hours

Electives

COOP-6002
Co-op
3

INDP-6002
Industry Project
3

COMM-3065
Development and Narrative Design 1

This is the first of four Development and Narrative Design courses and is a shared course for both game artists and programmers. Development and Narrative Design 1 explores the foundational concepts of the game design process. Evaluating a game, and all its components, allows game developers to determine areas of strength, weakness, and opportunities for user experience improvement. Students will learn to create a variety of engaging gameplay scenarios with the aim of creating a balanced and rewarding gaming experience.

COMM-4065
Development and Narrative Design 2

This is the second of four Development and Narrative Design courses and is a shared course for both game artists and programmers. This course explores the core concepts of the game design process. Evaluating a game, and all its components, allows game developers to determine areas of strength, weakness, and opportunities for improvement or new game elements. In this course students will learn to create concept art, mood boards, environmental designs, and concept art.

Prerequisites:
COMM-3065

COMM-5065
Development and Narrative Design 3

This is the third of four Development and Narrative Design courses and is a shared course for both game artists and programmers. Development and Narrative Design 3 explores the core concepts of the game design process. Evaluating a game, and all its components, allows game developers to determine areas of strength, weakness, and opportunities for improvement or new game elements. Students will explore topics such as designing for accessibility, gameplay conventions and genres, and the roles of AI and camera placement in game design.

Prerequisites:
COMM-4065

COMM-6065
Development and Narrative Design 4

This is the fourth and final Development and Narrative Design course and is a shared course for both game artists and programmers. Development and Narrative Design 4 explores the core concepts of the game design process. Evaluating a game, and all its components, allows game developers to determine areas of strength, weakness, and opportunities for improvement or new game elements. Students will explore the process of taking a game idea from pitch to promotion.

Prerequisites:
COMM-5065

COMP-3010
Software Development and Documentation 1

This is the first course in a two-part introduction to software development and documentation in the game industry. Students will explore foundational software engineering techniques used to develop modern applications and games. The course will cover software life-cycle topics such as requirement gathering, planning, design, implementation, and maintenance. Problem solving techniques will also be covered. Additionally, there will be an introduction to source control tools and other software development best practices.

COMP-3015
Programming 1

This is the first course in a two-part introduction to object-oriented programming in the context of graphics and sound programming. Students will learn to design, write, compile, and debug procedural and object-oriented programs that make use of 3rd-party graphic and sound libraries. Assignments will pull from real-world game development problems with an emphasis on modern tooling and coding best practices.

COMP-4010
Software Development and Documentation 2

This is the second in a two-part course on software engineering techniques and technical documentation. The course will focus on four distinct types of technical documents: learning-oriented tutorials, goal-oriented how-to guides, understanding-oriented explanations, and information-oriented reference materials. Students will learn to plan and produce these four types of technical documents. Quality assurance, automated testing strategies, and team source control workflows will also be covered.

Prerequisites:
COMP-3010

COMP-4015
Programming 2

This is the second course in a two-part introduction to object-oriented programming and design in the context of graphics and sound programming. The fundamentals of object-oriented programming are reinforced through applied design, implementation, troubleshooting, maintenance, and testing. Learners will move beyond the basics of OO programming to explore advanced topics such as parameterized types, and robust error handling.

An overview of the latest additions to the language of study will also be included.

Prerequisites:
COMP-3015

COMP-5015
Programming 3

This course is an introduction to algorithms and design patterns as they apply to common game development problems. Students will learn to develop efficient and elegant software algorithms for solving complex problems involving CPU / memory intensive operations. Students will also explore several advanced object-oriented data types and algorithms available in a modern object-oriented programming language.

Prerequisites:
COMP-4015

COMP-6015
Programming 4

This is the final course in the program devoted to programming concepts. Programming 4 is an introduction to the fundamentals of 3D graphics. Concepts of 3D geometry, rendering, graphics pipelines, lighting, materials, texturing, and shaders will be covered. Learners will work with each of these concepts in an industry standard graphics/game engine.

Prerequisites:
COMP-5015

COOP-6002
Co-op

(No description available at this time)

Prerequisites:
Students in Game Development-Art require: COMM-6065">COMM-6065 DMMT-6008 DMMT-6009 DMMT-6010">DMMT-6010 MGMT-6016">MGMT-6016 and MUME-6003. Students in Game Development-Programming require: COMM-6065">COMM-6065 COMP-6015 DMMT-3013 DMMT-4012 DMMT-6010">DMMT-6010 and MGMT-6016">MGMT-6016.

DMMT-3010
Game Studio 1

This is the first of four Game Studio courses and is a shared course for both game artists and programmers. Game Studio 1 is an introduction to the Unreal game engine. Students will develop strategies and workflows to create basic production workflows in a game engine. Working in teams, students learn to create small experimental gameplay prototypes. Students will also learn foundational Visual scripting techniques along with team-based version control workflows.

DMMT-3012
Game Development 1

This is the first of two project-based game development courses where learners design, document, implement and test a simple two-dimensional game. Learners will be shown how to use and extend a commercial game engine to develop this project. This course will introduce game engine architecture including graphics, sound, resource management, physics, collision detection, basic artificial intelligence, user interface, and more.

Prerequisites:
Take: MATH-3009, COMP-3015, COMP-3010, DMMT-3010, MGMT-3016, MATH-4009, COMP-4015, COMP-4010, DMMT-4010, MGMT-4016, COMM-3065 and COMM-4065

DMMT-3013
Modern Tech in Games

This course will be structured as collaborative workshop on new and emerging technologies in video game

development. Learners will research new game technologies, create prototypes, develop tutorials, and present their findings to their peers. This process will expose learners to numerous cutting-edge game development technologies, while providing them with practice at being self-directed learners.

Prerequisites:
Take MATH-3009 COMP-3015 COMP-3010 DMMT-3010 COMM-3065 MGMT-3016 MATH-4009 COMP-4015 COMP-4010 DMMT-4010 MGMT-4016 COMM-4065 MATH-5009 COMP-5015 and DMMT-3012.

DMMT-4010
Game Studio 2

This is the second of four Game Studio courses and is a shared course for both game artists and programmers. Game Studio 2 focuses on analyzing and designing games. Working in teams, students leverage skills, assets, and software applications to create small experimental gameplay prototypes. Foundational skills in game design workflow, automation, implementation, testing and debugging will be covered.

Prerequisites:
DMMT-3010

DMMT-4012
Game Development 2

This is the second of two courses focused on game development. This course will be an introduction to game play programming with a focus on building and prototyping game mechanics using an industry standard game engine. Learners will get hands-on experience with game subsystems including character controls, enemy behaviors, camera movement, story logic, player progression, and multiplayer networking.

Prerequisites:
DMMT-3012

DMMT-5010
Game Studio 3

This is the third of four Game Studio courses and is a shared course for both game artists and programmers. Game Studio 3 focuses on analyzing and designing solutions for creating games. Working in teams, students leverage skills, assets, and software applications to create experimental gameplay prototypes. Skills in game design workflow, automation, implementation, testing and debugging will be reinforced.

Prerequisites:
DMMT-4010

DMMT-6010
Game Studio 4

This is the fourth and final Game Studio courses and is a shared course for both game artists and programmers. Working in teams, students leverage skills, assets, and software applications to create an experimental gameplay prototype. Skills in game design workflow, automation, implementation, testing and debugging will continue to be reinforced.

Prerequisites:
DMMT-5010

INDP-6002
Industry Project

(No description available at this time)

Prerequisites:
Students in Game Development-Art require: COMM-6065">COMM-6065 DMMT-6008 DMMT-6009 DMMT-6010">DMMT-6010 MGMT-6016">MGMT-6016 and MUME-6003. Students in Game Development-Programming require: COMM-6065">COMM-6065 COMP-6015 DMMT-3013 DMMT-4012 DMMT-6010">DMMT-6010 and MGMT-6016">MGMT-6016.

MATH-3009
Applied Mathematics for Games 1

This is the first of three courses covering the mathematics required for video game development. Learners will solve common game development problems by applying mathematical and logical solutions. Students will study numeral systems, trigonometry, probability, precision, and the basics of 2D vectors and geometry. The mathematical concepts introduced in this course will be explored through small coding challenges and larger coding projects.

MATH-4009
Applied Mathematics for Games 2

This is the second of three courses covering the mathematics required for video game development. This course covers the essential geometric and algebraic tools and techniques used in game development and graphics programming. Students will learn how to represent objects mathematically, and how to perform translation, rotation, scaling, and basic collision detection in 2D and 3D. Other common game-related mathematical topics will be explored.

Prerequisites:
MATH-3009

MATH-5009
Applied Mathematics for Games 3

This is the final of three courses covering the mathematics required for video game development This course covers kinematics, dynamics, particle systems, and the basics of light and sound propagation. Students will learn how to apply these principles to problems encountered in physics-based games. The underlying mathematics involved will be covered as will third party libraries and engines that implement these ideas.

Prerequisites:
MATH-4009

MGMT-3016
Game Business Management 1

This is the first of four Game Business management courses and is a shared course for both game artists and programmers. This course provides an overview of the Game Industry development process, with a focus on the principles of Project Management. Students will develop their own game industry project ideas. Students will also learn foundational skills relating to budgets, funding models, design documentation, and Agile management principles.

MGMT-4016
Game Business Management 2

This is the second of four Game Business Management courses and is a shared course for both game artists and programmers. In this course students will analyze the Game Industry development process, with a focus on the principles of project development and management. Students will develop their own game industry project ideas and plans. Students will continue to develop skills relating to budgets, funding models, design documentation, and Agile management principals.

Prerequisites:
MGMT-3016

MGMT-5016
Game Business Management 3

This is the third of four Game Business Management courses and is a shared course for both game artists and programmers. In this course students will analyze the Game Industry development process, with a focus on the principles of project development and management. Students will develop their own game industry project ideas and plans. Students will continue to develop skills relating to budgets, funding models, design

documentation, and Agile management principals.

Prerequisites:
MGMT-4016

MGMT-6016
Game Business Management 4

This is the fourth and final Game Business Management course and is a shared course for both game artists and programmers. Game Business Management provides students with a grounding in the three key areas of business associated with game development. The course focuses on legal considerations, funding, economics and the marketing of game projects.

Prerequisites:
MGMT-5016

Computer/Laptop Requirements

Each student will be assigned their own classroom desktop computer with all the software needed for the program installed. (Note: Students should still have off-campus access to their own computer systems). The following hardware is recommended for the program.

Supplies recommended:

- Webcam and microphone
- Full-size headphones (ear bud type not recommended) - $150
- Minimum 1TB External Hard Drive (Samsung SSD T5 1TB model recommended) - $180
- A high-speed internet connection. Recommended minimum speed: 10 mbps for download, 3 mbps for upload. Slower internet connection speeds may result in audio and video issues. Please keep in mind that if others in your home are using the same internet connection at the same time as you are, you may also experience audio and video issues. Please refer to https://www.rrc.ca/future-students/computer-requirements/

Off-campus computer system specification guide:

This list represents the minimum hardware spec for a desktop computer system used for developing games with Unreal Engine 5 and or Unity:

- Windows 11 64-bit
- 32 or 64 GB RAM (more is always better)
- 1 TB SSD (OS Drive)
- 2 TB SSD (Data Drive)
- NVIDIA GeForce RTX 3070 or better
- Minimum twelve core processor AMD or Intel

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.

Other Information

Game Development - Programming Entrance Portfolio Instructions

Competitive Entry

Applicants must submit an entrance portfolio of programming work that demonstrates their coding abilities and technical proficiencies. The context for all the submitted projects should be provided in the form of descriptive write-ups and source code documentation. Along with your portfolio, you should also submit a resume and cover letter detailing your education and coding experience. This portfolio is graded and the applicants achieving the highest grades on the portfolio are granted entrance into the program.

Before you begin working on your portfolio

Make sure that you have submitted your application for the Game Development – Programming program and paid your application fee. Apply online at rrc.ca

Portfolio specifications

1. Three to five examples of your strongest programming work in digital format, such as:

   - Code-snippets (show us your code)
   - Code-documentation and explanation
   - Project attribution and credits

2. A resumé and cover letter stating your educational background, work experience, training, and any computer software and/or programming experience that you have had. You can also list hobbies and interests, and volunteer work. No references are needed.

What we are looking for

Your portfolio should showcase your proficiency and technical coding abilities as well as your creativity and attention to detail. Show us your code and explain your code in written form (PDF or hosted on GitHub preferred). Additionally creating short video explanations of your coding projects can be an effective way to explain your coding projects (YouTube). Ideally, the projects you submit should be game-related and showcase an intermediate-or-better foundation in computer programming.

Portfolio Submission

About a month before the deadline, applicants will receive portfolio submission instructions. Portfolios must be submitted by 11:59 PM, the last day of May. Portfolios will not be accepted after this deadline, so make sure to submit early.

Hearing back from us

In June, after all portfolios have been assessed, you will be contacted by RRC Polytech Enrolment Services letting you know if your portfolio score falls within acceptable range. If so, you will be invited to attend an informational session in where we will provide more information about the program.

If you have any questions regarding the portfolio specifications, please contact Chris Brower at cbrower@rrc.ca

Graduation Requirements

To graduate from the Game Development Advanced Diploma, all students must satisfactorily complete all 24

courses in the program (total 100 credit hours) plus the co-op. Students must also have achieved a graduating GPA of 2.0.

Academic Advising Service

Our academic advising service can provide information about our full-time programs, explain program admission requirements, and help you select the right program to meet your career and academic goals. We can also connect you with helpful people, resources, and supports.

- For more information visit academic advising.
- If you are an Indigenous student, you can contact an Indigenous Admissions Advisor.
- If you are an international student, you can contact International Education.

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