



Full Stack Web Development

Overview

- Full-time | [Part-time](#)
- One-year (12 month) certificate or two-year (16 month) diploma programs are available to non-international students
- International students may only enroll in the two-year (16 month) diploma program
- Blended delivery (on-campus as well as online classes)
- Includes work-integrated learning (Co-operative Work Experience or Industry Project) in the final term
- International applicants please visit [Academic Program, Dates and Fees](#) for a listing of programs for international students, currently availability and online application instructions
- [Exchange District Campus](#), Winnipeg
- Classes can be scheduled Monday through Friday 8 am - 8 pm

Description

Prepare for an in-demand career as a full stack web developer. This program provides you with the skills and abilities to manage the development of front-facing (what the user sees) and back-end (server-side) web technologies.

After graduating from the program, use your skills to design and build web applications covering everything from analysis and design to development implementation and maintenance. Common duties of a full stack developer include discussing requirements with clients, proposing solutions, ensuring a pleasant end user experience, maintaining databases, performing quality assurance and application coding.

Additional skills that will be developed include analytical thinking, customer service, problem solving, incident management, detail orientation, patience, quality control and time management.

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](tel: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.

Regular Admission Requirements

1. Grade 12

- 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
- If you are required to complete an English language assessment, do not submit your transcripts until requested to do so. See English Language Requirements (ELRs) for more information.

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.

Mature Student 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. Academic Requirement

- High school graduation is not required, but you must have successfully completed or be enrolled in:
 - Grade 12 English (40S)
- 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
- Due within 30 days of applying. However, if you apply within six weeks of the start date of the program, this item is due within 5 days of applying.

- If you are required to complete an English language assessment, do not submit your transcripts until requested to do so. See English Language Requirements (ELRs) for more information.

and

2. Meet Regular Admission Requirement 2

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
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?

You should have a sound aptitude for logical reasoning, the capacity for analytical thought, and mathematical ability.

A career in IT requires a great deal of patience and persistence. Manual dexterity for keyboarding is also a requirement.

The program will appeal to you if you have no prior related work experience or post-secondary education and your career goals are dependent upon you having technology skills.

Certificate Student Profile

With the Full Stack Web Development certificate, students are responsible for the development and support of web pages from the database all the way up to the browser. By the end of the certificate program students will be a junior full stack developer and have the basic understanding of many frameworks. Students will be able to build professional applications/ eCommerce applications.

Diploma Student Profile

After completing the Full-Stack Web Development diploma, students will be able to design, create, and modify a suite of web applications and provide front end and back-end support on development for web applications. Graduates will demonstrate proven experience in back-end and front-end systems. They are employed in computer software development firms, information technology consulting firms, information technology units throughout the private and public sectors, advertising agencies or they may be self-employed.

Locations, Dates and Fees

Next Estimated Term 1 Start Date (subject to change)

Location	Start Date	
Roblin Centre (Prev. PSC)	Aug 25, 2025	Apply Now

Costs (estimates only; subject to change)

Program/Student Fees	
Year 1	\$9,915.00
Year 2	\$6,972.00
Books and Supplies	
Year 1	\$2,150.00 ¹
Program/Student Fees (International)	
Year 1	\$16,943.00
Year 2	\$14,039.00

¹ Estimate includes laptop

Courses and Descriptions

Year 1	
Term 1Credit Hours	
COMM-1173 Communication Strategies	3
COMP-1311 IT Foundations	6
WEBD-1002 Database Management Systems 1	6
WEBD-1007 Web Development 1	6
WEBD-1009 Programming 1	

	6
Term 2Credit Hours	
COMM-2176 Communication for Systems and Innovative Thinking	3
WEBD-2010 Project Management Fundamentals and Agile Business Analysis	6
WEBD-2011 OO Systems Analysis & Design	6
WEBD-2012 Business Requirements Gathering & Design	6
WEBD-2013 Web Development 2	6
Year 2	
Term 3Credit Hours	
COMM-2172 Communication for the Workplace	3
WEBD-3010 Web Development 3	6
WEBD-3011 Agile Full Stack Web Development	6
WEBD-3012 Business Systems Build and Testing	6
WEBD-3013 Web Security	6
Term 4Credit Hours	
Electives	
PROJ-2013 Full Stack Industry Project - Diploma	6
WRKE-2011 Full Stack Co-operative Work Experience - Diploma	6

COMM-1173 Communication Strategies **RPL**

Everyone communicates, but are they doing it well? Communicative competence takes practice and self-awareness. In this foundational course, students will learn through discovery and project-based activities to practice approaching situations critically and collaboratively. By developing their communication skills, students will improve their interpersonal ability, intercultural competence, and digital fluency to prepare for success in the workplace and beyond. The strategies students will gain in this course will be useful throughout their program and in their chosen industry.

COMM-2172 Communication for the Workplace **RPL**

This foundational course focuses on essential communication skills for entering and advancing in industry. Students will develop skills for effective resumes, cover letters, and job interviews that are tailored to the specific needs of prospective employers. Additionally, students will enhance their interpersonal skills and

digital fluency while applying speaking, writing, and collaboration techniques crucial for job searching, adapting to new roles, and achieving long-term career goals. Students will also develop strategies for continuous learning to remain competitive in an ever-changing job market.

COMM-2176

Communication for Systems and Innovative Thinking [RPL](#)

Students will build on the skills they practiced in Communication Strategies by focusing on the information technology sector. Students will develop their ability to think at a systems level by analyzing problems to come up with innovative solutions. Learners will collaborate to manage, analyze, and communicate information to various audiences across different channels. This collaboration will involve active listening, networking, and persuasion strategies in an information technology context.

Prerequisites:

[COMM-1173](#)

COMP-1311

IT Foundations

This course covers common IT concepts including the structure of typical IT departments and the roles of various IT professionals. Students will learn how an operating system interacts with applications on a device. Students will be introduced to computer hardware and networks and will install peripherals such as printers. They will also learn foundational software development and database concepts. By the end of this course, students should use common IT best practices.

PROJ-2013

Full Stack Industry Project - Diploma

Industry Project provides real world experience in performing an ICT (Information/Communication Technology) project requiring cross-functional teamwork while meeting client requirements and providing deliverables agreed to in the project charter. Each project team will evaluate, analyze, plan, research, model, design, document, develop, test, and manage a project. Project requirements could include new development, research, or providing new functionality to an existing system. The course provides practice to further develop interpersonal, verbal, and written communication skills through teamwork and collaboration with project stakeholders. All team members will enhance their critical thinking, problem solving, research, independence, and life-long learning skills.

Prerequisites:

[WEBD-1002](#) and [COMP-1311](#) and [WEBD-1009](#) and [COMM-1173](#) and [WEBD-2013](#) and [WEBD-2010](#) and [COMM-2176](#) and [WEBD-2011](#) and [WEBD-2012](#)

WEBD-1002

Database Management Systems 1

This course explores Database Management Systems. Students will learn to write Structured Query Language (SQL) using both Data Definition Language (DDL) and Data Manipulation Language (DML). Students will develop and read Entity Relationship Diagrams (ERD) used to graphically represent the database. Lastly, the levels of Database Table Normalization will be covered.

WEBD-1007

Web Development 1

This course is designed to offer students an introduction to the Internet and programming Web applications. Students will create properly structured and valid Web pages using HTML5 & CSS with embedded JavaScript (using ES6 as a base) for data validation and user interaction. Javascript will also be used to access, and manipulate, simple JSON files and dynamically add the data contained in JSON to an HTML page. A course-ending project will have students plan, create and upload their own websites to the Web.

WEBD-1009

Programming 1

This course is a basic introduction to programming using the Java programming language. Students will develop, code, test, and debug programs for simple applications using proper programming principles and documentation. Topics include data types, variable declarations, control structures, methods, classes, inheritance, polymorphism, encapsulation, arrays, and other data structures.

WEBD-2010

Project Management Fundamentals and Agile Business Analysis

Study the fundamental aspects and principles of project management including life cycle, integration, planning, organization and communication. Learn about work breakdown structures, diagramming, cost management and resource allocation. Examine issues affecting project management including risk management, quality, conflict, and team building. You will become familiar with the different agile methodologies, tools and techniques, compose agile documentation deliverables, and create agile release, iteration, and/or daily plans. You will learn how to manage customer expectations, collaborate, and consistently ensure products are providing business value. Learn how to monitor team performance, conduct lessons learned, and perform continuous improvements for subsequent iterations.

WEBD-2011

OO Systems Analysis & Design

You will be introduced to the fundamentals of Object-Oriented Systems Analysis and full stack web application development design using the Unified Modeling Language (UML). You will be implementing UML diagrams in modelling software as it relates to web applications. The Analysis portion deals with basic OO concepts, capturing requirements with use cases, identifying classes, and modeling dynamic object behavior. The Design portion refines the analysis models with design (implementation) decisions, introduces patterns and examines the persistence of objects to relational databases. The Systems Development Life Cycle adopted for purposes of this course is defined as the USDP (Unified Software Development Process)

Prerequisites:

[WEBD-1007](#) and [WEBD-1002](#) and [COMP-1311](#)

WEBD-2012

Business Requirements Gathering & Design

Gain the skills needed to be obtain and document effective full stack web application development business requirements and create a design related to full stack web development. Enhance your ability to interview clients, improve business processes, problem-solve, work as part of a team and lead effective meetings. This course will also enhance your skills in designing a web application based on documented requirements.

WEBD-2013

Web Development 2

This course builds on skills learned in the Web Development 1 course. Students will also learn to employ technologies that run on a web server to create rich and dynamic websites. Topics covered include creating dynamic web pages generated from data stored in a database, validating data submitted to the server from a web form and saving that data in a database, as well as maintaining session cookies to provide data persistence to clients accessing the website. The PHP scripting language and the MySQL relational database management system are used to learn server-side web development techniques. Javascript will also be used to add dynamic client-side updates to the webpages being developed.

Prerequisites:

[WEBD-1007](#) AND [WEBD-1002](#)

WEBD-3010

Web Development 3

Students will study various frameworks used in REST (Representational State Transfer) based Python APIs (Application Programming Interface). The course will include learning of various RESTful APIs and will focus

on CI/CD part of web application development and production. Students will also learn about cloud based infrastructure and production based on orchestration services. Upon completion of this course, students will be able to demonstrate a full web application using Python.

Prerequisites:

[WEBD-2013](#)

WEBD-3011

Agile Full Stack Web Development

This course provides an examination of various back end full stack web development technologies and agile processes. Learners will implement an e-commerce system using web-programming framework as a course project. Coverage will also be given to server configuration, application deployment, source control and other contemporary web development topics.

Prerequisites:

[WEBD-2013](#)

WEBD-3012

Business Systems Build and Testing

Students will learn how to consistently and reliably get web applications deployed to a production environment. The course will begin by evaluating quality assurance and testing against application requirements. Students will then investigate web application build tools and processes. Then, the best practices in code deployment will be used as students learn how to assess all three concepts together to mitigate risk. The course will end with an assignment that will require students to launch a portfolio website, highlighting their previous course work by implementing testing, building, and deployment tools and processes outlines in this program.

Prerequisites:

[WEBD-2011](#)

WEBD-3013

Web Security

This course introduces students to a wide range of security topics such as understanding how attacks occur, who is attacking, cryptography, web security, policies and procedures, and understanding exploits. All topics will build on a foundation of ethics. Emphasis will be on real world examples of vulnerabilities and how they will be exploited.

Prerequisites:

[WEBD-2013](#)

WRKE-2011

Full Stack Co-operative Work Experience - Diploma

Co-operative education integrates related on-the-job experience with classroom theory by incorporating a term of paid employment within the terms of academic study. Students are given the opportunity to practice and apply the skills gained during the first two/three semesters of their program as productive full time employees on their work term. Each work placement is a minimum of 16 weeks. Student performance will be monitored and evaluated by both the department and the employer. Each student will participate in a midterm review of their employment midway through the semester

Prerequisites:

[WEBD-1002](#) and [COMP-1311](#) and [COMM-1173](#) and [WEBD-2013](#) and [WEBD-2010](#) and [COMM-2176](#) and [WEBD-2011](#) and [WEBD-2012](#)

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. The Full

Stack Web Development program requires the same laptop specifications as Applied Computer Education programs.

Please review the requirements at

<https://catalogue.rrc.ca/files/file/catalogue/LaptopandInternetSpecsFULLSTACK.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.

Online Learning is a critical component of course delivery. At a minimum, you will require the following to attend online classes while off-campus:

- access to a current Windows based laptop computer with a webcam
- 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 note that any anticipated costs are not included in Books and Supplies estimates.

Recent Changes

WEBD-1295 Information Systems has been replaced with COMP-1311 IT Foundations effective May 1, 2023

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.

Graduation Requirements

Students must complete the program within six years for the diploma and four years for the certificate from the start of the first course in the program, unless otherwise stated in the program outline.

A minimum overall program GPA of 2.0 (as per RRC Policy) and a minimum passing course grade requirement of D (50%)

Employment Potential

Certificate Potential Employment Opportunities

- Web Designer
- Web Developer
- Web Application Support Specialist
- Junior Full Stack Developer

Diploma Employment Opportunities

- Senior Full Stack Developer
- Senior Full Stack Java Developer
- Software Developer, Full Stack
- Front End Developer
- Back End Developer

- Web Application Business Analyst

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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Red River College Polytechnic endeavours to provide the most current version of all program and course information on this website. Please be advised that classes may be scheduled between 8:00 a.m. and 10:00 p.m. The College reserves the right to modify or cancel any course, program, process, or procedure without notice or prejudice. Fees may change without notice.