FULL-TIME | WINNIPEG LOCATIONS

Application Development and Delivery

Courses and Descriptions

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

Year 1	
Term 1	**Credit Hours**
COMM-1173 Communication Strategies	3
COMP-1327 Software Development Fundamentals	6
COMP-1328 Customer Experience and User Experience For Developers	6
COMP-1329 IT Fundamentals	6
COMP-1332 Service Management for Software Developers	3
Term 2	**Credit Hours**
COMM-2172 Communication for the Workplace	3
COMP-1333 Networking and Troubleshooting for Developers	3
COMP-1701 Transforming Data Into Databases	6
COMP-2230 Front-End Development	6
COMP-2327 Intermediate Software Development	6
Year 2	
Term 3	**Credit Hours**
COMM-2176 Communication for Systems and Innovative Thinking	3
COMP-3018 Back-End Development	6
COMP-3019 Application Design and Delivery	

	6
COMP-3020 Cloud Infrastructure and Development	6
COMP-3021 Secure Coding and Testing	3
Term 4Credit Hours	
COMP-4001 Developing in a DevOps Environment	6
COMP-4002 Full Stack Development	6
Electives	
COMP-1310 IT Architecture and Design	6
COMP-1334 Design Thinking and Innovation	6
COMP-1702 Introduction to Data Science and Machine Learning	6
COMP-2042 IT Service Desk and Customer Support	6
COMP-2044 Security Foundations	6
COMP-2045 Cloud Infrastructure	6
COMP-2231 Data Analysis with Libraries	6
COMP-2232 Internet of Things	6
COMP-4004 Business Application Integration	6
COMP-4005 Advanced Front-End Development and Analytics	6
Year 3	
Term 5Credit Hours	
Electives	
COOP-5001 Application Development and Delivery Co-op	6
INDP-5002 Application Development and Delivery Industry Project	6

Recognition of Prior Learning (RPL)

In addition to Transfer of Credit from a recognized post secondary institution, other RPL processes are

available for RPL courses. Click here for more information. For courses with no RPL, please check www.rrc.ca/rpl for additional contact information.

COMM-1173
Communication Strategies RPL

More Information

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.

Top

COMM-2172
Communication for the Workplace RPL

More Information

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.

Top

COMM-2176
Communication for Systems and Innovative Thinking RPL

More Information

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

Top

COMP-1310
IT Architecture and Design

More Information

IT solutions exist in order to meet business needs. In this course, students will learn foundational principles of IT architecture and design. They will learn how to interpret architectures and Detailed IT Design (DID) documents IT architects and engineers create and how to map the dependencies between infrastructures. Learners will also apply these architecture and design principles to create a simple IT solution.

Top

COMP-1327
Software Development Fundamentals

More Information

This course provides students with an introduction to computer programming for the purpose of developing business software. Students will learn how to write, test, modify, and debug short programs. They will also analyze existing code to fix errors, collaborate, and re-use code ethically. Students will consider user

experiences when creating software to address a business problem.

Top

COMP-1328
Customer Experience and User Experience For Developers

More Information

The perspectives of customers and users are central to good software development. This course introduces students to customer experience philosophies and processes, including the value delivery model. Students will also learn fundamental methods and tools to generate solutions for users. They will carry out a journey mapping process, create personas, write user stories, interpret wireframes to create a simple prototype, and conduct user testing. Digital accessibility will be also introduced.

Top

COMP-1329
IT Fundamentals RPL

More Information

In this foundational course, students will learn about computer hardware, operating systems, internet technologies, networks, servers, cloud computing, and web browsers. They will practice troubleshooting to resolve technology problems. Students will use system terminal commands and scripts to set up, configure, and automate commonly performed tasks. Students will follow best practices for basic IT security including methods of backing up data.

Top

COMP-1332
Service Management for Software Developers

More Information

People who develop and maintain software provide a service to a business and its customers. This course provides a broader context for the core activity of developing software. Students will use structured methods of the IT service management (ITSM) framework to resolve incidents, manage problems, plan for changes, and use knowledge bases. The software development life cycle will provide students with context for the activities of developers and other IT professionals, including design, testing, deployment, and maintenance.

Top

COMP-1333
Networking and Troubleshooting for Developers

More Information

Software developers benefit from learning the basics of computer networking to understand how software interacts with various parts of a network. This course covers the skills and tools used to visualize networks, identify and troubleshoot blocks in connections, and address application vulnerabilities. Students will learn to interpret application dependency maps and host an application on a server.

Top

COMP-1334
Design Thinking and Innovation

More Information

Iterative Design Thinking is used to create innovative solutions to real-world problems. Students will develop their ability to empathize with users, challenge assumptions, and re-define problems. They will also work in teams to develop and test prototypes and hone their presentation skills by pitching solutions. This course will develop students' ability to innovate and continually improve.

Top

COMP-1701
Transforming Data Into Databases

More Information

This is a data-focused course to develop confidence with quick data handling, parsing, structuring, and manipulating datasets for various database types. By viewing, understanding, and normalizing datasets, students will produce Entity Relationship Diagrams (ERDs) and other visual data schemas. Students will learn basic Structured Query Language (SQL) and NoSQL (not only SQL) data types, key-value pairs, and document stores. Students will develop basic to advanced commands including complex JOINs, advanced mathematical and string functions, and full-text search indexing functions. Students will tune the performance and execution times of queries using common practices of indexing and de-normalization.

Top

COMP-1702
Introduction to Data Science and Machine Learning

More Information

In this course, students will be introduced to the fields of Data Science and Machine Learning (DSML) and how they are used in real business applications. Students will get an introduction to the industry standard tools and technologies used in this field and learn definitions and meanings of common terms. They will analyze real case studies of how industry has applied the tools of DSML to improve their performance. By the end of this course, students will be able to contrast how DSML tools have impacted performance metrics in industry, compared to conventionally used methods.

Top

COMP-2042
IT Service Desk and Customer Support

More Information

IT Service Desk professionals provide support to both internal and external customers, sometimes by troubleshooting problems themselves, but otherwise by knowing who can address the issue. Students will reinforce the troubleshooting and customer experience skills developed in previous courses and use knowledge base articles to manage incidents and to solve problems. They will be able to support identity and access management processes; configure end-point solutions such as laptops, mobile devices, and cloud-based platforms; and contribute to Computer Emergency Response Teams (CERTs). Throughout this course, learners will apply the customer service model and further develop specific communication skills such as positive messaging during stressful events.

Prerequisites:
Take COMP-1309 or COMP-1332, take COMP-1311 or COMP-1329, and take COMP-1312 or COMP-1328.

Top

COMP-2044
Security Foundations

More Information

Information security skills are important for all IT professionals. Students will conduct security assessments, implement solutions, use software to monitor threats, and respond to specific events. The course covers standard security processes for containing threats. Students will learn to operate with an awareness of relevant laws and policies and demonstrate ethical reasoning. Learners will gain familiarity with security terminology and principles.

Prerequisites:
COMP-1311 or COMP-1329

Top

COMP-2045
Cloud Infrastructure RPL

More Information

Organizations increasingly rely on cloud services for their operations. This course covers an overview of the

architecture, implementation and delivery of cloud technologies including networks, databases, storage and compute services. Students will identify the cloud infrastructure required for specific IT services. They will also configure, deploy and maintain a cloud service as part of a comprehensive project. This course prepares students for the AWS certified Cloud Practitioner Foundational certification exam.

Prerequisites:
Take one of: COMP-1310, COMP-3019, or COMP-3008, and take one of COMP-1311, COMP-1329, or COMP-1295.

Top

COMP-2230
Front-End Development

More Information

Students will learn fundamental skills for front-end development including writing code to structure a web page and applying design and accessibility standards to a web page. Students add interactivity to web pages and connect an application programming interface (API) to retrieve data from an external source. Students will also use a version control system to maintain their code. They will also review code using both automated tests and peer reviews.

Prerequisites:
COMP-1327

Top

COMP-2231
Data Analysis with Libraries

More Information

In this course, students will learn the basics of analyzing data by using a programming language and related tools. The course introduces data science and machine learning and their uses in business applications. Students will use tools to import and prepare data for analysis. They will learn to visualize and interpret data and apply basic regression techniques. Students will work in groups on case studies using real life data sets.

Prerequisites:
COMP-1327

Top

COMP-2232
Internet of Things

More Information

The Internet of Things (IoT) is the collective network of technologies used to connect and manage physical devices. In this course, students will build functional IoT projects and control and monitor them using a programming language and framework. Students will also rapidly develop applications on a mobile device to control physical devices.

Prerequisites:
COMP-1327

Top

COMP-2327
Intermediate Software Development

More Information

This course deepens programming skills covered in the Software Development Fundamentals course. Students will be introduced to data types and structures, scope, algorithms, design patterns, unit testing, user documentation and other core concepts. Students will integrate more sophisticated programming ideas into their projects to align with modern industry practices.

Prerequisites:
COMP-1327

Top

COMP-3018
Back-End Development

More Information

This course involves setting up a back-end environment for a website or application, creating a local server instance and connecting to a database. This work will be done collaboratively using a version control system. This course also covers the creation of an application programming interface (API) and supporting documentation based on REST architecture. Students will use code to set and manage routes in the API, handle responses, perform tests, authenticate users and process user input. They will also learn to securely manage the connection and configuration information.

Prerequisites:
COMP-1701 COMP-2230
Top

COMP-3019
Application Design and Delivery

More Information

Before software developers write code, they require a design for the software solution. Students will learn about the design process, including analysis of client needs, so they can interpret software architecture plans. The course covers methods of managing a software development project with an emphasis on agile methodologies.

Students will work in groups to carry out an agile project to experience how teams of developers collaborate with clients, leaders, and other IT professionals.

Prerequisites:
COMP-2230
Top

COMP-3020
Cloud Infrastructure and Development

More Information

In this course, students will be introduced to cloud platforms and will set up a cloud service based on an architecture diagram. Students will also develop an interactive application in the cloud which connects to a serverless backend, an application programming interface (API) gateway, and a database. This work will be done in teams using an agile workflow to ensure code is tested for syntax, accessibility, and security and continuously integrated.

Prerequisites:
COMP-2230 COMP-1333
Top

COMP-3021
Secure Coding and Testing RPL

More Information

This course covers programming standards and practices used to increase the security of code. Students will learn to review code for security both manually and by using automated tools to identify vulnerabilities. Students will apply strategies to prevent common vulnerabilities and exposures. This course also includes discussion on the legal requirements related to secure coding and ethical issues in software development.

Prerequisites:

COMP-2327

Top

COMP-4001
Developing in a DevOps Environment

More Information

In this course, students will work in teams using an agile workflow to create, modify and test a cloud-based microservice. They will use an orchestration tool to process, configure, deploy, and manage a containerized application at scale. Students will practice the continuous integration/continuous deployment workflow to build and maintain a code base in a code repository. They will also learn how code moves through development, testing and production environments. In addition, students will maintain the application and its infrastructure by using tools to monitor performance and send alerts when issues arise.

Prerequisites:

COMP-3020 COMP-3018

Top

COMP-4002
Full Stack Development

More Information

Students will have the opportunity to further refine their skills learned from other courses by designing and developing an e-commerce system using a programming language and associated framework. Coverage will also be given to server configuration, application deployment, source control and other contemporary web development topics.

Prerequisites:

COMP-3020 COMP-2230 and COMP-3018

Top

COMP-4004
Business Application Integration

More Information

Students will learn how to connect business applications by using industry standard application programming interfaces (APIs). Both standalone and cloud APIs will be explored to give students a broad toolkit that can be used to develop useful bridge applications to improve business productivity.

Prerequisites:

COMP-3018 COMP-2327

Top

COMP-4005
Advanced Front-End Development and Analytics

More Information

In this course, students will use continuous integration team workflows to create a single page web application. Students will learn advanced responsive web design techniques. They will perform functional and end-to-end testing, unit testing, and automated tests. They will also assess the performance of a web page and perform A/B testing to determine user preference. Search engine optimization is also covered.

Prerequisites:

COMP-3020 COMP-3018

Top

COOP-5001
Application Development and Delivery Co-op

More Information

Co-operative education integrates related on-the-job experience with classroom theory by incorporating a term of paid or unpaid employment in the final term of the program. Students are given the opportunity to practice and apply the skills gained during the academic semesters of their program as productive full-time employees on their work term. Student performance will be monitored and evaluated by both the department and the employer.

Prerequisites:
All term 1, 2, and 3 courses and at least 75% of term 4 courses.

Top

INDP-5002
Application Development and Delivery Industry Project

More Information

The Industry Project provides real world experience in applying software design and delivery skills to a project requiring cross-functional teamwork. Project teams will work jointly with industry partners at the ACE Project Space facility. Each project team will evaluate, analyze, plan, research, model, design, document, develop, test, and manage a project. This option provides practice to further develop interpersonal, verbal, and written communication 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:
All term 1, 2, and 3 courses and at least 75% of term 4 courses.

Top

How to Apply

Apply Today

Locations, Dates and Fees

CO-OP/Practicum Information

Back to top

SUPPORTS

Credit for Education, Work and Life Learning

Financial Aid

Scholarships and Bursaries