## First Year

### PROG1337A – Programming Fundamentals

This course provides learners with the knowledge and skill to design and develop computer programs using an integrated development environment (IDE). Learners are taught key programming concepts such as variables, selection structures, repetition structures, and methods. They gain proficiency in utilizing an integrated development environment (IDE) to set up, design, develop, and execute their programs.

### DATA1054A – Database Design and SQL

This course provides learners with the knowledge and skill to design and implement relational databases using data-definition and data manipulation SQL statements as well as industry best practices. It covers incremental modeling through Entity Relationship (ER) Diagrams, emphasizing normalization and realization in an actual Database system. Learners use SQL Data Definition Language and Data Manipulation Language to interact with the database, covering commands for inserting, updating, and deleting data. They also construct complex queries using joins, conditional SQL statements, and aggregate functions.

### MULT1190A – Responsive Web Design

This course provides learners with the knowledge and skill to create responsive web designs meeting a set of specifications and industry best practices. Learners are taught HTML, CSS, and their correct implementation to be viewed on, and adapt to, a variety of devices – from large screens to mobile devices. Learners are taught how to use flexible grids, layouts, images, and CSS media queries to make their designs responsive. They also learn industry best practices in the wire-framing/prototyping and iterative design of mobile web applications.

### SAAL1882A – Introduction to Source Control

This course introduces learners to the practices of using a source control management (SCM) software, like Git, to create and maintain organized, safe, and collaboration-friendly project repositories. Learners are taught how to manage branches and workflows to ensure an effective version control throughout development.

### OSSE1101A – Operating and File System Concepts

This self-directed course introduces learners to basic operating system, computer file system, and word-processing concepts. Learners are taught how operating systems manage various processes and how to trace these processes. They learn how to navigate a computer file system, create and manage files and directories, and use a command line interface (CLI) to support these steps. Finally, learners are taught the very basics of word processing software.

### COMM1281A – Written, Interpersonal & Intrapersonal Skills Development

This course provides learners with the knowledge and skills to develop essential written, interpersonal communication, and intrapersonal skills to enhance personal and professional growth. Learners are provided the tools with which to effectively convey messages, navigate interpersonal dynamics, foster meaningful relationships, and cultivate self-awareness.

### MATH1300A – Computer Math and Statistics

This course provides learners with the knowledge and skills to solve problems involving computer number systems and basic statistics. Learners are taught math concepts relevant to the information systems field. These include review of number systems, computer arithmetic, sets and relations, matrices, and linear equations. Learners are also taught elementary statistics, including descriptive statistics, probability distributions, and sampling.

### PERS1274A – Orientation to Community Service

This course provides an introduction to the meaning of community service.  Students learn how community service can enhance a student’s educational experience, personal growth, employability, and civic responsibility. Students participate in one day of volunteering to enhance their understanding of civic responsibility and to help the New Brunswick Community College realize its vision of transforming lives and communities.

### PROG1338A – Object Oriented Programming

This course provides learners with the knowledge and skills to construct software applications using Object-Oriented Programming (OOP) principles. Learners are taught the fundamental building blocks of OOP, including classes, objects, methods, and attributes. They also learn the principles of encapsulation, inheritance, polymorphism, and abstraction. They use this knowledge to develop, test, and debug larger, more complex programs.

### PROG1339A – JavaScript Programming

This course provides learners with the knowledge and skills to write programs using the JavaScript programming language. They are taught the skills required to help create efficient, dynamic, and interactive web applications. Emphasis is placed the Document Object Model (DOM) and working with JavaScript libraries to enhance development processes and application functionality.

### DATA1055A – Intermediate SQL for Developers

This course provides learners with the knowledge and skills to design and develop scalable databases that support robust business applications. Learners are taught SQL sub-queries, stored procedures, concurrency management, and transaction control to ensure the integrity and efficiency of database operations. Additionally, they learn to implement triggers effectively to automate responses to database events.

### PROG1340A – Database Programming

This course provides learners with the knowledge and skills to design and write programs that connect to, interact with, and support a database. Learners carry out these functions using various objects and techniques.

### SYST1088A – Software Engineering

This course provides learners with the knowledge and skills to apply object-oriented software analysis and design processes using Unified Modeling Language (UML), the Agile methodology, and project management practices. Learners acquire knowledge of software engineering concepts and methodologies, emphasizing an object-oriented approach and project management best practices. They apply this knowledge to a develop Gantt chart, conduct a requirements analysis, create an object-oriented design, and implement Agile Scrum practices.

### OSSE1100A – Command Line Interface: Bash

This course provides learners with the knowledge and skills to utilize the Bash Command Line Interface (CLI) shell and scripts to control a computer’s operating system and run applications. Learners are taught essential skills including file navigation, manipulation, permissions management, and process control. They learn the fundamentals of writing scripts, customizing the shell environment, and using a shell-based text editor. Finally, learners are also introduced to basic Windows Command Prompts.

### SECU1322B – Work Safely

A safe and healthy workplace is the responsibility of the employer and the employee. This course introduces students to the importance of working safely and addresses how employers and employees can control the hazards and risks associated with the workplace. Students will also learn about the roles and responsibilities of key stakeholders including WorkSafeNB, the employer and the employee in ensuring workplaces are safe.

## Second Year

### PROG1341J – Advanced JavaScript

This course provides learners with the knowledge and skills to write programs using advanced JavaScript techniques and scripting libraries for use in complex web development. It builds upon the programming knowledge and skills acquired earlier in the program and integrates it with learners’ knowledge of responsive web design and app construction. Emphasis is placed on building middleware, asynchronous communications, front and back-end functionality, and modern frameworks.

### PROG1342A – Server Side Web: MVC Framework

This course provides learners with the knowledge and skills to design and implement server-side web applications based upon specific business requirements, using a variety of technologies and techniques. It covers data-modelling using Object-Relational Mapping (ORM) to define, manage, and modify the application-specific data structure throughout its lifecycle. Learners determine how to choose from available features and apply them to solve domain-specific problems.

### PERS1313A – Employment Readiness

This course is designed to provide learners with the knowledge and skills necessary to secure professional employment. It enables learners to identify career options and aspirations based on their strengths, limitations, and readiness to address skills gaps. It also focuses on the current-day tools and resources used to optimize employment opportunities.

### PROG1343A – PHP

This course provides learners with the knowledge and skills to develop dynamic, data-driven, and interactive server-side web applications using PHP. It covers fundamental PHP programming concepts, server interactions, database integration, session management, form handling, file management, web services, and debugging techniques.

### PROG1346A – Enterprise Java

This course provides learners with the knowledge and skills to develop dynamic, data-driven, enterprise web applications using Java Enterprise. Topics include Object Relational Mapping (ORM), Representational State Transfer Application Programming Interface (Rest API), the Model View Controller (MVC) design pattern, Jakarta Server Pages (JSP), Thymeleaf, and Spring Boot.

### PROG1354A – Front-End Frameworks: SPAs (Web Stream)

This course provides an in-depth exploration of modern front-end frameworks in JavaScript, focusing on popular libraries and frameworks such as Angular and NextJS. Learners are taught the principles of building dynamic, responsive, single page web applications while understanding the underlying concepts that drive these frameworks.

### PROG1353A – C++ Programming (C++ Stream)

This course provides learners with the knowledge and skills to develop C++ applications according to standard design principles and best practices. Learners incorporate previously acquired programming knowledge and skills to support the learning of the C++ programming language. They develop applications using object-oriented design principles and architecture patterns. They gain proficiency in managing memory dynamically, handling errors through exceptions, and optimizing program performance. The course covers file handling techniques, concurrency controls, and multithreading mechanisms, along with testing and debugging using modern tools.

### SYST1091A – QA Testing (Analyst Stream)

This course provides learners with the knowledge and skills to build testing methodologies into the development process. Learners explore the fundamental principles of software testing and learn to apply various testing techniques and strategies at different levels. Emphasis is placed on designing test cases from user specifications, executing system test cases to uncover defects, and documenting them effectively.

### SYST1092A – Cloud Foundations: AWS (Analyst Stream)

This course provides learners with foundational knowledge of the cloud-based platform, Amazon Web Services (AWS) to assist in the design, deployment, and management of cloud-based solutions. Course content aligns with the AWS Academy’s Cloud Foundations training and certification course.

### COMM1282A – Tech Research and Writing for IT

This course provides learners with the knowledge and skills to produce technical reports and documentation suited to their area of expertise in the Information Technology field. Learners are taught the principles of technical writing, methods of research, and referencing practices. They apply this knowledge to produce clear, concise, and accurate technical reports and documentation tailored to technical and non-technical teams, stakeholders, or end-users.

### PROG1345A – Networking for Programmers

This course introduces learners to fundamental networking concepts and technologies. Learners apply this knowledge, coupled with programming skills, to design and write software applications that communicate over computer networks.

### PROG1344A – Applied Software Architecture

This course is designed to provide learners with the knowledge and skills to develop software systems using selected architectural styles and design patterns for optimal scalability, maintainability, and performance. As part of this, they adhere to best practices in coding, testing, and documentation to ensure quality software.

### TBD – Android Programming (Web Stream)

TBD

### PROG1355A – iOS Application Development (Web Stream)

This course provides learners with knowledge and skills to create iPhone applications using the Swift language, SwiftUI, and the Xcode integrated development environment (IDE). Swift is a modern programming language for developing software with an emphasis on safety, performance, and ease of use. SwiftUI is a framework from which to build user interfaces. Xcode is an IDE with a comprehensive set of tools for building, testing, and debugging applications. All of these were developed by Apple and intended for use on Apple platforms.

### TBD – Embedded Systems: Mechatronics (C++ Stream)

TBD

### TBD – Embedded Systems Project (C++ Stream)

TBD

### TBD – Analysis Project (Analysis Stream)

TBD

### TBD – Capstone Project or Field Experience

TBD