INFORMATION SYSTEMS ANALYSIS AND QUALITY MANAGEMENT

PROGRAM OUTLINE

Full-Time Program
Employment Readiness and Support Training: 6 Weeks (100 Hours)
Core Program Training: 16 Weeks (400 Hours)
Practicum Placement: 8 Weeks (320 Hours)
Scheduled Breaks: 3 Weeks
Total Program Duration: 33 Weeks (820 Hours)

PROGRAM DESCRIPTION

This program will equip students with the knowledge and in-demand technical abilities required by modern software development organizations to become an effective Software Quality Assurance Analyst.

Students will learn the foundational management processes and software development lifecycle models used within leading technology enterprises to manage complex software projects.

The standard development practices, methodologies, tool competencies used within software development teams will be adopted and applied by students within this program to build a strong understand of the entire end-to-end software build process, from requirements gathering and analysis to deployment into production.

This program will emphasize and incorporate the use of software test automation solutions within modern software project which students will learn and implement into the creation of their own test automation framework.

This program will prepare students to challenge the Oracle Certified Foundations Associate exam, AWS Cloud Foundation exam, and the ISTQB Foundations exam to achieve 3 top industry certifications.

CAREER OCCUPATION PROGRAM

NOC: 2283

This program prepares students for the following career occupations:

Application Tester, Application Testing Technician, Software Test Co-Ordinator, Software Tester, Software Testing Technician, Systems Tester, Systems Testing Technician, User Acceptance Tester

ADMISSION REQUIREMENTS

Admission requirements may not be waived by either the student nor the Canadian College of Technology and Business (CCTB).

No funding may be disbursed to the student or received by CCTB until all admission requirements are met.

A payment plan can be offered to a student if student loan is not an available option.

Requirements:

- Good command of English language (See Language Proficiency Policy)
- High school diploma or equivalent from an approved government institution of applicant's home country, or applicant is minimum 19 years of age
- Students are required to have and use their own personal computer in class

LEARNING OBJECTIVES

After completing this program, students will be able to:

- Define the organizational structures and management processes within modern software development organizations.
- Define and implement the practices and methodologies relating to software quality analysis, quality control, and quality management.
- Understand the different implementation models of the Software Development Lifecycle within modern software development projects.
- Implement the principles and practices of software testing including requirements analysis, producing test cases, defect management, the communication lifecycle, automation testing solutions and the use of various defect and issue management solutions.
- Understand and implement the concepts and methodologies relating to the design, deployment, and management of relational database system solutions.
- Perform complex database queries using the Structured Query Language (SQL).
- Design, deploy, manage, and maintain basic cloud-based environments using Amazon Web Services.
- Perform system administration tasks using Linux using the command-line interface.
- Design and execute Linux shell scripts for the purpose of automated administration and configuration of system environments.
- Perform automated web user-interface testing using the Python programming language and Selenium Web Driver.
- Build a basic software automation testing framework.
- Understand the implementation of no-code automation testing solutions.
- Use infrastructure provisioning and configuration management tools to automate the deployment and configuration of software testing and development environments.
- Understand the tools used to manage the entire end-to-end software build process within modern software development teams.
- Showcase a professional test automation framework project to prospective employers which will demonstrate the knowledge, skills, and tool expertise acquired within this program.

PROGRAM EVALUATION METHODS AND COMPLETION REQUIREMENTS

CCTB evaluates students using a variety of methods including projects, assignments, presentations, assessments, quizzes, and exams. Students will be given a performance evaluation before 30% of the hours of instruction of the program are completed. This evaluation will address any academic concerns that the college may have regarding student performance and/or learning outcomes. This evaluation will also ensure the student comprehensively understands the grading system, and what actions they can take moving forward to achieve or maintain a higher grade.

To complete the program, students will be required to achieve a minimum grade of 65% in each course, as well as complete the work experience component of the program.

The work experience component of the program includes a performance-based evaluation conducted by the placement host and an analysis report created by the student relating to their work experience that must submitted to the faculty.

Additionally, to successfully complete the program, students must maintain a minimum attendance rate of 75%.

Please reference the CCTB Dispute Resolution and Grade Appeal Policy

DELIVERY METHODS

- In-Class Delivery

PROGRAM MATERIALS

Resources in the form of custom learning materials will be provided by CCTB.

Software tools and user licenses will be provided by CCTB.

Instructors will provide students with additional educational resources that will be specific to the subject matter of each course. These resources will be used in conjunction with the class lectures.

These resources and learning materials will be made available online via the CCTB Canvas learning management system. Students are required to login to gain access to the e-materials.

Students must have and use their own personal computer in class.

PROGRAM ORGANIZATION

1.	Orientation and Essential Skills	50 HRS
2.	Information Systems and Software Quality	50 HRS
3.	Relational Database Systems and SQL	50 HRS
4.	Cloud Infrastructure and Environment Management	75 HRS
5.	Building a Software Test Automation Framework	125 HRS
6.	Introduction to Development Operations (DevOps)	50 HRS
7.	Final Capstone Project	50 HRS
	Practicum Placement	**320 HRS**
8.	Employment Search Support	50 HRS
	Total Duration	**820 HRS**

COURSE DESCRIPTIONS

1. Orientation and Essential Skills

This orientation and essential skills training course will include reading, writing, document use, numeracy, digital literacy, and professional communication skills.

It will also offer Health & Safety protocols & WorkSafe BC Policies for COVID 19, Labour Market Information, barriers to employment and career exploration.

Participants will receive Short-Term Skills Training Certifications offered through online courses. These include Privacy Training, Focus on Diversity and Inclusion and Gender Based Awareness.

This course will also cover a broad overview to computers and software. The course is designed to give a manager's insight into computer hardware, operating systems, the internet, related terminology, and an effective working knowledge of Microsoft office software (Word, Excel, Power Point).

2. Information Systems and Software Quality

This course introduces students to the organizational structures and management processes of modern software development organizations with an emphasis on software quality analysis, quality control and quality management concepts and methodologies.

Through the study of the Software Development Lifecycle, students will form foundational understanding how different SDLC models, whether predictive (Waterfall) or adaptive (Agile), are adopted within a software project to complete business initiatives and develop software solutions.

Students will learn the principles of software testing including analyzing requirements, producing test cases, defect management, the communication

lifecycle, automation testing solutions, as well as the use of various back-tracking system solutions such as Application Lifecycle Management and Jira to emulate a real project environment.

This course will prepare students to challenge the ISTQB Foundations exam to achieve certification.

3. **Relational Database Systems and SQL**

    This course will teach students the concepts, methodologies and different implementations of relational database systems including database modeling, relationship identification, entity mapping, data normalization and validation to produce various database schemas based on technical requirements.

    Students will gain an understanding of the use of the structured query language (SQL) on an intermediate level and will be able to create complex database queries.

    This course will prepare students to challenge the Oracle Certified Foundations Associate exam to achieve certification.

4. **Cloud Infrastructure and Environment Management**

    In this course, students will learn how to build, deploy, manage, and maintain cloud-based environments using AWS Cloud Services.

    Students will learn the foundations of Linux Systems Administration for the purpose of manually deploying enterprise level web applications on both local and cloud-based environments for testing.

    This course will then introduce students to the concepts of automated shell scripting in which they will create their own shell scripts for the purpose of creating automated deployments of different environments. Students will be shown how to maintain their scripts using both local and remote version control (GIT/GitHub)

    The skills acquired in this course will be used throughout the rest of the program to deploy the applications under test (AUT) that will be used for building and automation testing framework.

    This course will prepare students to challenge the AWS Cloud Practitioner exam to achieve certification.

5. **Building a Software Test Automation Framework**

    The purpose of this course will be for students to build an automated software testing framework using Python and the Selenium framework.

    Students will learn the Python programming language from foundational language syntax all the way through to object-oriented programming to build a strong skill base for producing high-quality and maintainable code. The Selenium Framework will be introduced to students for producing scripts to enable automated UI testing.

The instructor will lead students through a step-by-step process of building an entire automated software testing framework that students will manage and maintain through version control.

No-code automated software testing solutions will be covered at the terminal end of this course to show students how they can use and implement different solutions based on various projects and business requirements that an organization may have.

6. Introduction to Development Operations (DevOps)

In this course, students will learn how to automate the entire end-to-end build process of a software solution using various infrastructure provisioning, configuration management and build deployment tools.

Students will learn the fundamentals of the following build process tools:

- Terraform for automated infrastructure provision on the cloud.
- Ansible for configuration management of deployed systems.
- Jenkins for running automated test and managing the build deployment process.
- Git for version control.

This course will provide students with valuable hand-on experience in how software developers and operations teams manage the software build process in a real working environment.

7. Test Automation Capstone Project

This course is composed of an instructor led capstone project that students will produce for their professional portfolios using all the concepts, methodologies and tools used within this course.

Students will deploy two software applications to use as their AUTs and will design two software test automation frameworks using both a code and codeless solution.

Moreover, students will be expected to produce business and technical requirements, create test cases, design test types, and manage any software defects using a back-tracking solution such as ALM or Jira.

Students will be expected to use all the relevant tools taught throughout the program including infrastructure provision, configuration management, version control, and build management tools.

8. Employment Readiness

This course is a 2-week workshops on resume and cover letter development, interview skills, job search skills, and professional development.

Additionally, there will be personal development, job sustainment and cultural awareness workshops including unique Indigenous protocols and activities incorporating culturally appropriate activities.

9. **Employment Search Support**

In this course, participants will receive 2-week employment search transition support to optimize their ability to connect with hiring employers for various Software Quality & Test Automator's roles.

This employment search support includes:

- an updated job search plan with target employers
- instruction on cultivating mentorship opportunities
- resume/cover letter update (adding work experience skills and activities) specific to Information Technology jobs.

For participants requiring additional supports, re-connection to WorkBC Case Managers and other support services will be facilitated. This period also includes completion/recognition events; evaluation of Milestones achieved; Touchback Sessions; evaluations & reporting.