Course Outline

School:	Eng. Tech. & Applied Science
Department:	Information and Communication Engineering Technology (ICET)
Course Title:	Software Testing Automated Tools
Course Code:	COMP 316
Course Hours/Credits:	28
Prerequisites:	COMP 123, COMP 225, COMP 228
Co-requisites:	N/A
Eligible for Prior Learning, Assessment and Recognition:	Yes
Originated by:	Arben Tapia
Revised by:	Arben Tapia
Revision Date:	Winter 2014
Current Semester:	Fall 2016
Approved by:	*ppesikan c/o*

Chairperson/Dean

Students are expected to review and understand all areas of the course outline.

Retain this course outline for future transfer credit applications. A fee may be charged for additional copies.

This course outline is available in alternative formats upon request.

Course Description

Although manual testing may find many defects in a software application, it is a laborious and time consuming process. Additionally it may not be effective in finding promptly certain classes of defects. Test automation is the process of writing computer program(s) to do testing that otherwise need to be done manually. Once test have been automated, they can be run quickly and repeatedly. This course delivers the skills on how the quality assurance testing is automated. It focuses on testing automation tools, frameworks and suites.

Program Outcomes

Successful completion of this and other courses in the program culminates in the achievement of the Vocational Learning Outcomes (program outcomes) set by the Ministry of Advanced Education and Skills Development in the Program Standard. The VLOs express the learning a student must reliably demonstrate before graduation. To ensure a meaningful learning experience and to better understand how this course and program prepare graduates for success, students are encouraged to review the Program Standard by visiting http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/. For apprenticeship-based programs, visit http://www.collegeoftrades.ca/training-standards.

Course Learning Outcomes

The student will reliably demonstrate the ability to:

1. Explain the principles, scope and best practices of test automation
2. Practice the principles of automation of Code-driven Testing.
3. Execute automated Graphical User Interface tests.
4. Utilize Visual Studio Test Professional and/or Microsoft Test Manager to create Test Plan(s)/Suite(s)/Case(s)
5. Utilize effectively JUnit etc.
6. Summarize the purpose and working of various automation tools like: IBM Rational Functional Tester, Selenium etc.

Essential Employability Skills (EES)

The student will reliably demonstrate the ability to*:

1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.
7. Analyze, evaluate, and apply relevant information from a variety of sources.

There are 11 Essential Employability Skills outcomes as per the Ministry Program Standard. Of these 11 outcomes, the above will be assessed in this course.

Global Citizenship and Equity (GC&E) Outcomes

The student will reliably demonstrate the ability to*:

1. Identify one's roles and responsibilities as a global citizen in personal and professional life.
3. Analyze issues of equity at the personal, professional, and global level.

6. Support personal and social responsibility initiatives at the local, national or global level.

There are 6 institutional Global Citizenship & Equity outcomes. Of these 6 outcomes, the above will be assessed in this course.

Text and other Instructional/Learning Materials

Text Book(s):

Text: Software Testing with Visual Studio® 2010

• By: Jeff Levinson

• Publisher: Addison-Wesley Professional

• Pub. Date: February 21, 2011

• Print ISBN-10: 0-321-73448-3

• Print ISBN-13: 978-0-321-73448-8

• Web ISBN-10: 0-13-218063-4

• Web ISBN-13: 978-0-13-218063-4

• Pages in Print Edition: 336

Online Resource(s):

http://msdn.microsoft.com/en-us/vstudio/ff637362.aspx

Material(s) required for completing this course:

Team Foundation Server

Evaluation Scheme

➪ Assignments, In-class exercises: Assignments, In-class exercises

➪ In class discussions: Discussions

➪ Quiz on Presentations: Quiz about Other Group Presentations

➪ Research and Group Presentations: Groups research a particular tool for test automation and present their research in-front of the class

➪ Mid Term Exam: Mid Term Exam

➪ Final Exam: Final Exam

Evaluation Name	CLO(s)	EES Outcome(s)	GCE Outcome(s)	Weight/100
Assignments, In-class exercises	2, 3, 4, 5	1, 4, 7		25
In class discussions	1	1, 3, 4	1, 3, 6	10
Quiz on Presentations		1, 2, 4		10
Research and Group Presentations	6	1, 7		10
Mid Term Exam	1	4		25
Final Exam	1	1, 2, 4		20
Total				100%

If students are unable to write a test they should immediately contact their professor or program Chair for advice. In exceptional and well documented circumstances (e.g. unforeseen family problems, serious illness, or death of a close family member), students may be able to write a make-up test.

All submitted work may be reviewed for authenticity and originality utilizing Turnitin®. Students who do not wish to have their work submitted to Turnitin® must, by the end of the second week of class, communicate this in writing to the instructor and make mutually agreeable alternate arrangements.

When writing tests, students must be able to produce official College photo identification or they may be

refused the right to take the test or test results will be void.

Student Accommodation

Students with permanent or temporary accommodations who require academic accommodations are encouraged to register with the Centre for Students with Disabilities (CSD) located at Ashtonbee (L1-04), Progress (C1-03), Morningside (Rm 190), and Story Arts Campus (Rm 284). Documentation outlining the functional limitations of a disability is required; however, interim accommodations pending receipt of documentation may be possible. This service is free and confidential. For more information, please email csd@centennialcollege.ca.

Use of Dictionaries

- Dictionaries may be used in tests and examinations, or in portions of tests and examinations, as long as they are non-electronic (not capable of storing information) and hard copy (reviewed by the invigilator to ensure notes are not incorporated that would affect test or examination integrity).

Program or School Policies

N/A

Course Policies

N/A

College Policies

Students should familiarize themselves with all College Policies that cover academic matters and student conduct.

All students and employees have the right to study and work in an environment that is free from discrimination and harassment and promotes respect and equity. Centennial policies ensure all incidents of harassment, discrimination, bullying and violence will be addressed and responded to accordingly.

Academic honesty is integral to the learning process and a necessary ingredient of academic integrity. Academic dishonesty includes cheating, plagiarism, and impersonation. All of these occur when the work of others is presented by a student as their own and/or without citing sources of information. Breaches of academic honesty may result in a failing grade on the assignment/course, suspension or expulsion from the college.

For more information on these and other policies, please visit www.centennialcollege.ca/about-centennial/college-overview/college-policies.

Students enrolled in a joint or collaborative program are subject to the partner institution's academic policies.

PLAR Process

This course is eligible for Prior Learning Assessment and Recognition (PLAR). PLAR is a process by which course credit may be granted for past learning acquired through work or other life experiences. The PLAR process involves completing an assessment (portfolio, test, assignment, etc.) that reliably demonstrates achievement of the course learning outcomes. Contact the academic school to obtain information on the PLAR process and the required assessment.

This course outline and its associated weekly topical(s) may not be reproduced, in whole or in part, without the prior permission of Centennial College.

Topical Outline (subject to change):

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
1	Course Outline Overview Goals of Testing Principles of Testing Tool Support for Automated Testing	Week 1 Slides Chapter 6 of ISQTB Syllabus Foundation Chapter 1 of the book	State goals of testing State principles of testing Name types of tool support for automated testing	Lecture	In-class assignment	
2	Software Quality and Testing Overview	Week 2 Slides Chapter 2 of the book	Cite the Software Quality: .Requirements .Business Value .Expectations .Non-functional requirements .Process and Quality	Lecture, hands-on lab In-class discussions and exercises	In-class assignment	
3	Planning your testing	Chapter 3 of the book	Use MTM to: .Complete creation of Test Plans .Configure Test Plans .Create Test Suite(s) and Test Case(s)	Lecture, hands-on lab	In-class assignment	
4	Executing Manual Tests	Week 4 Slides Chapter 4 of the book	. Use Test Case WorkItem Type . Run Tests . Examine Test Results	Lecture, hands-on lab	In-class assignment	
5	Student Presentations on tools for automated testing	Students share knowledge gained by researching a tool and presenting to class	Observe and research tools for: . SCM and Agile Version Control . Load/Stress/Performance Testing Tools . Unit Testing (other than VS Unit Testing) . Defect Tracking . Team Coordination, etc.	Group Research Work	In-Class Discussion and Student Group Presentations	
6	Resolving Bugs	Week 6 Slides Chapter 5 of the book	. Trace the bug life-cycle . Bug Differences and modifications . Generate Bug Reports . Use Intellitrace . Fixing Bugs . Set the build quality . Assign a new build . Verify the fix . Dealing with impacted test cases	Lecture, demo, hands-on lab In-class discussions and exercises	In-class assignment	
7	MidTerm Exam	Review	Weeks 1-6	MidTerm Exam	MidTerm Exam	
8	Automating Test Cases	Week 8 Slides Chapter 6 of the book	. Understand when to automate or not . Use the Automated Testing Framework	Lecture, demo, hands on lab	In-class assignment	

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
	Cases	Chapter 6 of the book	. Use the Automated Testing Framework . Create an Automated Test from a Manual Test . Add Validations . Add additional Recorded steps . Use Parameterized Coded UI Tests . Handle dynamic values . Combine Multiple Tests . Associate Coded UI Tests with Test Cases	on lab In-class discussion and exercises	assignment	
9	Executing Automated Test Cases	Week 9 slides Chapter 7 of the book	. Execute the Automated Tests from VS . Execute the Automated Tests from command line. . Execute the Automated Tests from MTM . Execute the Automated Tests with Team Build . Know the Automated Tests Gotchas	Lecture, demo, hands on lab In-class discussion and exercises	In-class assignment	
10	Lab Management	Week 10 Slides Chapter 8 of the book	. Manage Virtual environments through MTM . Finish Virt. env. configuration . Change settings for automated tests . Execute a lab build . Run automated tests through MTM . Perform Manual Tests in a Virtual Environment	Lecture, demo, hands on lab In-class discussion and exercises	In-class assignment	
11	Reporting and Metrics	Week 11 Slides Chapter 9 of the book	-Understand the reporting structure -Know the built-in reports .bug status .bug trends .reactivations .build quality indicators .build success over time .build summary .stories overview .test case readiness .test plan progress -Dashboards(excel services reports) -report with MS Excel -Metrics	In-class discussion and exercises	In-class assignment	
12	Unit Testing with VS Unit Testing	Week 12 Slides Handouts	Use VS Unit Testing	Lecture, demo, hands on lab In-class discussion and exercises	In-class assignment	
13	Using Selenium	Week 13 Slides	Use Selenium	Lecture, demo, hands-		

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
	Final Exam Review			on lab Review Discussion		
14	Final Exam	Final Exam	Final Exam	Final Exam	Final Exam	