**Faculty of Science**

## CSCI 3060U – Software Quality Assurance
Course outline for Winter 2018

### 1. Course Details & Important Dates*

| Course Type | Day | Time | Location |
|---|---|---|---|
| Lecture | Tues. | 2:10pm – 3:30pm | UA2130 |
| Lecture | Thu. | 2:10pm – 3:30pm | UA2130 |
| Lab 1 | Thu. | 8:10am – 9:30am | UA2220 |
| Lab 2 | Fri. | 2:10pm – 3:30pm | UA2220 |

* for other important dates go to: www.uoit.ca >Current Students >Important Dates and Deadlines

### 2. Instructor Contact Information

| Instructor Name | Office | Email |
|---|---|---|
| Michael Miljanovic | UA 2029 | michael.miljanovic@uoit.ca |
| Office Hours: Thursdays 1:00pm-2:00pm, or by appointment | | |

| Teaching Assistant Name | Office | Email |
|---|---|---|
| Luisa Rojas Garcia | - | luisa.rojasgarcia@uoit.net |
| Office Hours: During laboratory times or by appointment. | | |

### 3. Course Description

**CSCI 3060U Software Quality Assurance.** Building on previous software design courses, this course concentrates on the rigorous development of high quality software systems. Topics covered in this course include software process, software verification and validation (testing, inspection), software metrics, and software maintenance. A major team project is an important feature of this course. 3 cr, 3 lec, 1.5 lab. This course may be offered in a hybrid format with 1.5 hours of lectures and 1.5 hours online lectures and learning materials. Prerequisites: CSCI 2020U, CSCI 2040U or CSCI 3040U. Credit restriction: ENGR 3980U.

## 5. Course Design

This course will consist of two weekly lectures and a weekly laboratory. Students will be required to complete three tests during the semester, which will cover material from the lectures and course readings.  The course will conclude with a final examination covering all of the material from lectures and readings.

In addition to the tests and the final exam there will also be a major course project based on the principles of Extreme Programming. Students will form teams of 2-3 members and complete the project in 5-6 phases.

## 6. Outline of Topics in the Course

*Introduction (0.5 week)*
- Introduction to Software Engineering
- Software Quality - what is it, how is it measured, how is it achieved

*Software Process (1.5 weeks)*
- Software Process Models - plans for achieving and improving software quality
- eXtreme Programming - a controversial modern software process

*Software Testing (4 weeks)*
- Systematic Testing - what is it, levels of testing, designing for test
- Black Box Testing - functional, input, output, partitioning and gray box testing
- White Box Testing - coverage, path, decision and mutation testing
- Continuous Testing - regression, defect testing
- Test Automation - test maintenance and analysis, harnesses, tracking, tools

*Software Inspection (2 weeks)*
- Systematic Inspection - what is it, levels of inspection, inspection process, formal reviews
- Inspection in the Software Process - requirements, design, process and code inspections
- Code Inspection - techniques, practices, continuous inspection, refactoring

*Alternative Verification and Validation Techniques (2 week)*
- Dynamic analysis, static analysis, formal methods.

*Software Metrics (2 weeks)*
- Software Metrics - measurement basics, assessment and prediction
- Product Quality Metrics, Process Metrics, etc.

## 7. Required Texts/Readings

*Online Resources.*
> Online articles and websites will be used. Links to all online resources will be posted on the course website.

## 8. Evaluation Method

Course Project Assignments (5-6)*          40%
Tests (3)**                                24%
Final Exam**                               36%

*Peer evaluations of team members will be conducted and can contribute to the final project mark.*

*** To pass the course a student must pass the individual work (i.e., the 60% of the mark consisting of the tests and the final exam).*

*Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.*

## 9. Assignments and Tests

The schedule for the project phases/assignments is as follows:

- Assignment #0 – Friday, January 12, 2018
- Assignment #1 – Friday, January 26, 2018
- Assignment #2 – Friday, February 9, 2018
- Assignment #3 – Monday, February 26, 2018
- Assignment #4 – Friday, March 9, 2018
- Assignment #5 – Friday, March 23, 2018
- Assignment #6 – Monday, April 9, 2018

The schedule for tests is as follows:

- Test #1 – late January 2018
- Test #2 – early March 2018
- Test #3 – April 2018

The policy for missed tests and assignments is available at
http://www.science.uoit.ca/undergraduate/current-students/academic-policies.php.

## 10. Students with Disabilities

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite
Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges.  Office hours are 8:30am-4:30pm, Mon-Fri.  For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.
Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

## 12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship.  This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences.  The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university.  A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

Additionally, all students are required to follow the Faculty of Science academic policies (http://www.science.uoit.ca/undergraduate/current-students/academic-policies.php). The Faculty of Science academic policies cover topics including academic honesty, missed tests/exams, and more.

## 14. Final Examinations (if applicable)

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it.  Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

## 15. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA").  In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

## 16. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness.  To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes.  Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.