Carleton University  
School of Computer Science  
COMP 4004A: Software Quality Engineering  
Fall 2019  
Last Updated August 31st, 2019

Class Schedule  
Lectures: Tuesday and Thursday at 11:35 UC 182  
Fall Break: October 21-25 (no office/TA hours that week)  
Office/TA hours will be held starting the week of September 10th and run until the week of Dec 6th inclusively

Instructor Info  
Jean-Pierre Corriveau room: 5328 HP  
email: jeanpier AT scs.carleton.ca  
office hours: Tuesday 9:30-11:15 or by email appointment

Course Website  
http://people.scs.carleton.ca/~jeanpier/4004F19

no textbook is used in this course  
cuLearn will be used for announcements and for assignment submissions. Any posted course material will be on the course’s web page, not in cuLearn.

TAs: names  
Fathima fathimanizwanayusuff@cmail.carleton.ca Friday 10AM-noon  
Tansin TansinJahan@cmail.carleton.ca Thursday 3-5pm

Detailed Course Description  
It is widely acknowledged that software quality is of the utmost importance. Yet, despite recent advancements in program verification, automatic debugging, assertion deduction and model-based testing (MBT), Ralph Johnson (of Gang of Four design patterns fame) and many others still view software verification as a "catastrophic computer science failure". In this course we first and foremost explore the issue of software testing, that is, the execution of software in order to find errors. A first pervasive concern will be test automation, which is necessary if testing is to be objective, systematic, and scalable. A second pervasive concern will be the testing of scenarios (as captured in use cases, user stories, use case maps, and/or message sequence charts).

In one part of the course, we will start with topics relevant to a more code-oriented (industry-relevant) approach to testing, focusing in particular on test driven development (TDD) and the strengths and limitations of popular testing tools such as JUnit and Cucumber. In the other part of the course, we will move to more state-of-the-art model-based approaches to software testing. In particular, we will focus on scenario monitoring at run-time.
Prerequisites
The student is assumed to have a strong background in object-oriented programming and must have passed COMP 3004. Programming for most of the assignments is in Java. Basic knowledge of threading, concurrency issues and web app design is assumed. All assignments will have to be demoed and run on the School’s image. Networked solutions must run on several distinct (possibly virtual) machines.

Software
For the assignments, students will be using Java/Eclipse, JUnit, Cucumber, and possibly other testing tools. Students are expected to learn by themselves all tools used in this course. Assignments must be submitted through cuLearn AND must work in the senior SCS lab. Some of the material used in class will be posted on the course website. There are several tutorials available online for the tools we use, in particular for JUnit (http://www.vogella.com/tutorials/JUnit/article.html) and Cucumber.

All material created for this course (including presentations and posted material, case studies and assignments) remain the exclusive intellectual property of their author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

Suggested Optional Readings
1) Robert Binder (good introduction to OOT)
   Object-oriented Testing, Addison-Wesley 2000

2) K. Naik and P. Tripathy (pricey but excellent reference for s/w testing)

Evaluation
Students will be evaluated in this course using several assignments of distinct value (wrt the final grade), which will be introduced and discussed in some of the lectures of this course:

Assignments 100% (of final grade)

NO LATE submission WILL BE ACCEPTED (and thus will receive a grade of 0). NO extensions are to be granted.

NOTES:
1) There will be NO supplemental or grade raising exam in this course.
2) No mark (or extra work) can be substituted for another!
3) You must obtain a grade greater than 49% on EACH assignment in order to pass this course.
4) Assignments are to be done individually without any sharing. Collaboration between students is not permitted: all alleged plagiarism will be reported to the Faculty with possible dire consequences for your academic record. Posting any work in a public location (eg GitHub) constitutes a form of sharing that enables plagiarism. As such, if your work is plagiarized, you will be considered to have participated in this offence!
Undergraduate Academic Advisor
The undergraduate advisor for the School of Computer Science is available in Room 5302C HP, by telephone at 520-2600, ext. 4364 or by email at undergraduate_advisor@scs.carleton.ca. The advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

Science Student Success Centre (SSSC)
The Science Student Success Centre is a central advising unit for students in Science courses. We help students achieve their goals by providing access to resources, workshops and activities that enhance their academic and study skills, and help them make key connections with their peers. Mentors can help you customize an individual study plan which includes weekly and semester work or study schedules, and also help when you need information on developing a new study strategy, obtaining summer job opportunities, or clarifying ideas and concepts to better understand and cope with new course content. Science mentors can help you learn how to learn what you need to learn for your classes.
Drop by the Science Student Success Centre at 3431 Herzberg Laboratories or visit http://sssc.carleton.ca/

University Policies

Student Academic Integrity Policy
Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties that range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar. The policy is at: https://carleton.ca/senate/wp-content/uploads/Academic-Integrity-Policy1.pdf

Plagiarism
As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean.

Unauthorized co-operation or collaboration
As mentioned above, collaboration between students submitting distinct assignments is NOT permitted in this course.

Equity Statements
You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:
Pregnancy obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities
If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

Survivors of Sexual Violence
As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

Medical Certificate
The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to http://www1.carleton.ca/registrar/forms/