

**Carleton University**  
**School of Computer Science**  
**COMP 4004A: Software Quality Engineering**  
**Fall 2018**

*Last Updated August 21<sup>st</sup>, 2018*

**Class Schedule**

Lectures: Monday and Wednesday at 13:05 UC 182  
Fall Break: October 22-26 (no office/TA hours)  
Office/TA hours will be held starting the week of September 10<sup>th</sup>  
and run until Dec 7<sup>th</sup> inclusively

**Instructor Info**

Jean-Pierre Corriveau room: 5328 HP  
email: jeanpier AT scs.carleton.ca  
office hours: Tuesday 11:30-13:00 or by email appointment

**Course Website**

<http://people.scs.carleton.ca/~jeanpier/4004F18>

**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 (emails and office hours TBA)**

Das Moitry  
Tansin Jahan

**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 the first 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**. Then, in the second 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.

Assignments will address both parts of the course. Time permitting, we will discuss other topics in OO Software Quality Engineering.

## Prerequisites

The student is assumed to have a strong background in object-oriented programming and must have passed COMP 3004. Programming for the assignments is in Java.

## Software

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.

Slides from instructor are generally posted at 2 and 4 per pages.

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)  
Software Testing and Quality Assurance, Wiley, 2008

## Evaluation

Students will be evaluated in this course according to the following components:

- |                                 |     |                                |
|---------------------------------|-----|--------------------------------|
| 1) Assignments                  | 50% | (3 <b>non</b> -equally-valued) |
| 2) <b>Open</b> -book final exam | 50% | (3 hours - formally scheduled) |

## 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 have an average of more than 50% for the assignments *and* pass the final exam in order to pass the course. Please note that what constitutes a passing grade for the final is determined by the instructor in light of the performance of all those who attend the final exam.
- 4) The exam addresses material covered during lectures, which extends considerably beyond what is required for the assignments.
- 5) Assignments are to be done individually. Collaboration between students is *not* permitted: all alleged plagiarism will be reported to the Dean of the Faculty.

## Assignments: Information and Late Policies

Late projects will *not* be accepted and will automatically receive a mark of 0.

## **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](mailto: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/>

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## **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 which 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](http://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](https://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](mailto: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](https://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 its 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](https://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](https://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/>

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