

SWEN224 (2017) - Software Correctness

Prescription

This course is concerned with the development of correct software, especially the use of formal requirements and specifications to develop high-integrity software. This has applications in several areas, such as safety-critical systems (e.g. commercial airliners, space systems, etc) and high-performance concurrent systems. The course will examine a range of principles and techniques which underpin a rigorous approach to the specification and implementation of software. A sequence of assignments and labs will see a range of tools being used to specify small software systems, and to check that they meet their requirements.

Course learning objectives

Students who pass this course will be able to:

1. Use mathematical structures such as sets, functions, relations and sequences to model software systems, and to state desired properties of such systems, including pre and postconditions, class invariants and loop invariants. (3(a),3(c))
2. Use mathematical reasoning to prove properties of the various formalisms studied in the course, including correctness properties of programs. (3(a),3(b),3(c))
3. Use tools such as Whiley and OpenJML to check correctness properties of software systems. (3(a),3(b),3(d),3(f))
4. Use formalisms such as regular expressions and context free grammars to describe the syntactic structure of artificial languages. (3(a),3(c))
5. Use state machine models such as finite acceptors and push down acceptors to construct recognisers for artificial languages. (3(a),3(c))

Withdrawal from Course

Withdrawal dates and process:

<http://www.victoria.ac.nz/students/study/course-additions-withdrawals>

Lecturers



David Streader (Coordinator)

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260 Cotton, Kelburn



Lindsay Groves

Teaching Format

During the trimester there will be three lectures per week.

Dates (trimester, teaching & break dates)

- Teaching: 17 July 2017 - 20 October 2017
- Break: 28 August 2017 - 08 September 2017
- Study period: 24 October 2017 - 26 October 2017
- Exam period: 27 October 2017 - 18 November 2017

Class Times and Room Numbers

17 July 2017 - 27 August 2017

- **Wednesday** 13:10 - 14:00 – MT228, Student Union, Kelburn
- **Friday** 13:10 - 14:00 – MT228, Student Union, Kelburn

11 September 2017 - 22 October 2017

- **Wednesday** 13:10 - 14:00 – MT228, Student Union, Kelburn
- **Friday** 13:10 - 14:00 – MT228, Student Union, Kelburn

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Mandatory Course Requirements

In addition to achieving an overall pass mark of at least 50%, students must:

- The mandatory requirements for SWEN 224 that you:
 - Make a reasonable attempt on three out of the four assignments
 - Attend at least 8 of the 10 weekly two hour lab sessions.
 - Achieve at least a 'D' grade in the final exam.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

Assessment

This course will be internally and externally assessed through the following;

- Assignments
- Lab
- Mid-term Test
- Final Examination

Workload

In order to maintain satisfactory progress in SWEN 224, you should plan to spend an average of at least 10 hours per week on this paper. A reasonable breakdown for these hours would be:

- Lectures & Labs: 4 hours
- Readings: 1 hour
- Assignments: 6 hours

Teaching Plan

Links to General Course Information

- Academic Integrity and Plagiarism: <http://www.victoria.ac.nz/students/study/exams/integrity-plagiarism>
- Academic Progress: <http://www.victoria.ac.nz/students/study/progress/academic-progress> (including restrictions and non-engagement)
- Dates and deadlines: <http://www.victoria.ac.nz/students/study/dates>
- Grades: <http://www.victoria.ac.nz/students/study/progress/grades>
- Special passes: Refer to the Assessment Handbook, at <http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf>
- Statutes and policies, e.g. Student Conduct Statute: <http://www.victoria.ac.nz/about/governance/strategy>
- Student support: <http://www.victoria.ac.nz/students/support>
- Students with disabilities: http://www.victoria.ac.nz/st_services/disability/
- Student Charter: <http://www.victoria.ac.nz/learning-teaching/learning-partnerships/student-charter>
- Terms and Conditions: <http://www.victoria.ac.nz/study/apply-enrol/terms-conditions/student-contract>
- Turnitin: <http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin>
- University structure: <http://www.victoria.ac.nz/about/governance/structure>
- VUWSA: <http://www.vuwsa.org.nz>

Offering CRN: [18321](#)

Points: 15

Prerequisites: COMP 103, ENGR 123 or MATH 161

Duration: 17 July 2017 - 19 November 2017

Starts: Trimester 2

Campus: Kelburn