

COMP103 (2017) - Introduction to Data Structures and Algorithms

Prescription

This course builds on COMP 102, focusing on the techniques for designing, building and analysing computer programs that deal with large collections of data. The course addresses techniques for programming with collections of data, and the data structures and algorithms needed to implement these collections. The course expands programming skills and provides an understanding of the principles of data abstraction, algorithm design, and the analysis of algorithms fundamental to computer science.

Course learning objectives

Students who pass this course will be able to:

1. Be able to read algorithms written in pseudocode.
2. Know and be able to program with a range of basic algorithms: linear search, binary search, several standard sorting algorithms, hashing, tree traversal algorithms, and insertion / deletion in binary trees and priority trees.
3. Understand the principles of designing programs with collection types and be able to program using the Java generic collection classes.
4. Know the properties and differences of a range of collection data types (including sets, bags, maps, stacks, queues, priority queues, trees, and partially ordered trees) and be able to implement them using a range of array and linked data structures.
5. Understand the concepts relating to the complexity analysis of algorithms, apply them to basic algorithms, and use the results of the analysis to make good design decisions in building programs.
6. Be able to test programs in a systematic way.

Course content

All online material for this course can be accessed at http://ecs.victoria.ac.nz/Courses/COMP103_2017T2/

Withdrawal from Course

Withdrawal dates and process:

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

Lecturers

Lindsay Groves (Coordinator)

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257 Cotton, Kelburn

Thomas Kuehne

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233 Cotton, Kelburn

Teaching Format

During the trimester there will be three lectures and one tutorial per week. There will also be helpdesk sessions.

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

- **Monday** 11:00 - 11:50 – LT303, New Kirk, Kelburn
- **Wednesday** 11:00 - 11:50 – LT303, New Kirk, Kelburn
- **Thursday** 11:00 - 11:50 – LT303, New Kirk, Kelburn

11 September 2017 - 22 October 2017

- **Monday** 11:00 - 11:50 – LT303, New Kirk, Kelburn
- **Wednesday** 11:00 - 11:50 – LT303, New Kirk, Kelburn
- **Thursday** 11:00 - 11:50 – LT303, New Kirk, Kelburn

Other Classes

All online material for this course can be accessed at http://ecs.victoria.ac.nz/Courses/COMP103_2017T2/

Set Texts and Recommended Readings

Required

All online material for this course can be accessed at http://ecs.victoria.ac.nz/Courses/COMP103_2017T2/

Mandatory Course Requirements

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

- ◦ submit reasonable attempts for at least **7 assignments**, out of the 10 (or obtain an exemption by speaking with the course coordinator),
- 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 assignments, test, participation in tutorials and a final examination.

All online material for this course can be accessed at http://ecs.victoria.ac.nz/Courses/COMP103_2017T2/

Workload

COMP 103 is a 15 point course, and you should plan to spend an average of at least 10 hours per week on it. A plausible breakdown for these hours would be:

- Lectures and tutorials: 4
- Reading/revision: 1

- Assignments: 5

Teaching Plan

Links to General Course Information

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

Offering CRN: [945](#)

Points: 15

Prerequisites: COMP 112 or B- or higher in COMP 102

Duration: 17 July 2017 - 19 November 2017

Starts: Trimester 2

Campus: Kelburn