

# COSC229 Algorithms

## Course Outline

Course supervisor: Professor T. Takaoka  
Department of Computer Science  
Email: `tad`, phone 7773, room 302

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### Course aims

This course is on the fundamentals of algorithms and data structures. The course starts with basic data structures and algorithm paradigms. Then we proceed to efficient sorting algorithms and graph algorithms. Finally we cover more practical topics, which include one-dimensional and two-dimensional pattern matching, computational geometry, and algorithms in number theory. The algorithms discussed are mainly sequential ones, that is, they are executed by one computer. Parallel algorithms and advanced algorithm design are discussed in stage 3.

Part 1. data structures, sorting, graph algorithms

Part 2. pattern matching, computational geometry, number theoretic algorithms

### Lectures and Lecturers

Lectures are on Tuesday 1-2 p.m. and Thursday 11-12 noon in room Math/Cosc 031. for the whole term. Lecturers are the supervisor given above for Part 1 and Assoc. Prof. R. Mukundan for Part 2.

### Tutorials/Labs

There are two tutorial/lab streams per week (Monday 11-1pm and Wednesday 1-3pm) and you should attend one of them (of your choice) each week. If numbers attending are poorly balanced, we will ask some students to change their streams.

Your tutor's name is Stephen Fitchett (`saf75@uclive.canterbury.ac.nz`). Tutorial sessions will be held in room 111. Laboratory sessions will be held in labs 4.

## Assessment

Part	Type	Worth	Due date
Assignment 1	Programming assignment	20%	August 19, drop due August 26
Assignment 2	Programming assignment	20%	October 14, drop due October 21
Exam		60%	date to be announced

The test is an open book one. Important documents are posted to the COSC229 in our departmental web page. Please read all such notices.

Note that in order to pass the course, you must achieve a minimum mark of 45% on invigilated assessment items. The 45% cut-off will be applied to the mean of weighted marks on invigilated work after scaling. If you achieve less than 45%, you will receive a C-, D or E, depending on your marks.

## Recommended Reading

- Goodrich and Tamassia (recommended text), *Algorithm Design*, John Wiley & Sons, 2002. Also from the same authors and publisher, *Data Structures and Algorithms in Java 5E*, 2010
- Horowitz, Sahni, and Rajasekaran, *Computer Algorithms*, Macmillan, 1997 (or newer editions). Also recommended reading in COSC329.
- Cormen, Leiserson, Rivest, and Stein, *Introduction to Algorithms*, The MIT Press, 2001

## Other important documents

You should be in possession of two important Computer Science documents that are handed out together (versions of these documents are also available through our departmental web page at <http://www.cosc.canterbury.ac.nz>). One is the Computer Science “Standard Academic Rules, Regulations and Guidelines”, and includes details of how to apply for aegrotats and other forms of special consideration. The other document contains our code of practice for computer use, and emergency procedures.

You should read both documents carefully, as you will be asked to sign a form acknowledging that you agree to abide by the rules specified in the two documents.