

COMP3600/COMP6466 Algorithms

2011-S2 Basic Course Information

1 Course Description

This course deals with the study of algorithms for solving practical problems, and of the data structures used in their implementation. Detailed analysis of the resource requirements of algorithms will be an important issue.

The topics covered will include: mathematical tools, greedy algorithms, dynamic programming, divide-and-conquer, data structures (hash tables, binary search trees, red-black trees, and disjoint sets), basic search techniques (breadth-first-search and depth-first-search), graph algorithms (minimum spanning trees and single-source and all-to-all shortest paths), etc.

2 Prerequisites

COMP2100, or COMP2300, or COMP2500 or COMP1140; 6units of 2000-level COMP courses or enrollment in BComptlSci; and 6 units of 2000-MATH/STAT/EMET courses or COMP2600.

3 Lectures, Laboratories and Consultations

The course consists of about thirty lectures, four tutorials/labs (two hours each) which run together. The detailed arrangement is as follows.

Three lectures are offered per week. They are on Mondays and Wednesdays. The lectures are scheduled at

- 2:00pm – 4:00pm on Mondays, JD101 (Building 27)
- 2:00pm – 3:00pm on Wednesdays, JD101 (Building 27)

Four tut/lab will be offered for the course, which are run on Weeks 4, 6, 10 and 12, and there are three groups. The times for the tutorials and labs are scheduled at

- 10:00am – 12:00pm on Tuesday, CSIT N113 (Tutor: Jeremy Dawson)
- 12:00pm – 2:00pm on Tuesday, CSIT N113 (Tutor: Pete Janes)
- 3:00pm – 5:00pm on Wednesday, CSIT N112 (Tutor: Pete Janes)
- 11:00am – 1:00pm on Friday, CSIT N114 (Tutor: Jeremy Dawson)

The consulting times are as follows.

- 11:00am – 12:00pm on Fridays, CSIT N334
- 11:00am – 12:00pm on Wednesdays, CSIT N334

4 Textbook and Reference Books

The following text book will be used for this course:

Introduction to Algorithms
by T. H. Cormen, C. E. Leiserson, R. L. Rivest and C. Stein
MIT Press, 3rd Ed., 2009.

The following reference books are recommended for this course:

Computer Algorithms – Introduction to Design and Analysis
by Sara Baase and Allen Van Gelder
Addison-Wesley, 3rd Edition, 2000.

Algorithms in C
by Robert Sedgewick
Addison-Wesley, 3rd Edition, 2002.

Algorithms Design
by John Kleinberg and Eva Tardos
Addison-Wesley, 2005.

Algorithms
by Sanjoy Dasgupta, Christos Papadimitriou and Umesh Vazirani
McGraw Hill Higher Education, 2008.

The Design and Analysis of Computer Algorithms
by Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman
Addison-Wesley, 1974.

5 Assessment

There will be TWO assignments (a_1 and a_2) and ONE final exam. Following the assessment policy of departmental courses, the assessment will be based on a 40:55 weighting for assignments ($A/100$) and the final examination ($E/100$). Additionally, the tut/lab participation ($P/100$) is worth 5% of the final marks. The final marks will be calculated by the following formula:

$$Total = 0.4A + 0.55E + 0.05P$$

$$A = 0.45a_1 + 0.55a_2$$

The department's policy on plagiarism will be enforced.

6 Staff

The lecturer is Dr Weifa Liang (N334, CSIT Building, phone: 6125-3019).