**MA4704 Introduction to Data Structures and Algorithms**

Asymptotic notation; Sorting - merge sort, heap sort, priority queue, quick sort, sorting in linear time, order statistics; Data structures - heap, hash tables, binary search tree, balanced trees (red-black tree, AVL tree); Algorithm design techniques - divide and conquer, dynamic programming, greedy algorithm, amortized analysis; Elementary graph algorithms, minimum spanning tree, shortest path algorithms.

**References:**

1. T. H. Cormen, C. E. Leiserson, R. L. Rivest and C. Stein, Introduction to Algorithms, MIT Press, 2001.
2. M. T. Goodrich and R. Tamassia, Data Structures and Algorithms in Java, Wiley, 2006.
3. A. V. Aho and J. E. Hopcroft, Data Structures and Algorithms, Addison-Wesley, 1983.
4. S. Sahni, Data Structures, Algorithms and Applications in C++, 2nd Ed., Universities Press, 2005.
5. T. Budd, An Introduction to Object-Oriented Programming, Addison-Wesley, 2002.
6. Mark Allen Weiss, "Data Structures and Algorithms in C++", Addison Wesley, 2003.
7. Adam Drozdek, "Data Structures and Algorithms in C++", Brooks and Cole, 2001.
8. Aho, Hopcroft and Ullmann, "Data structures and Algorithm", Addison Welsey, 1984.