

Distributed Systems

Dr. Richard Mayr

University of Edinburgh

<http://www.inf.ed.ac.uk/teaching/courses/ds>

Fall term 2009

0. Organisational Matters

- Instructor: Dr. Richard Mayr
 - <http://homepages.inf.ed.ac.uk/~rmayr>
 - Office: IF 4.11
 - Office hours: Mon 14:00-15:00
- Course Web Site
 - <http://www.inf.ed.ac.uk/teaching/courses/ds>
- Lectures
 - Mon./Thurs. 15:00-15:50. DHT FRN and 7GS F21
- Course Assignments
 - 2 graded assignments + 1 project (for level 11 only)

0. Organisational Matters

- Course Grade
 - Assignments (and project) 25%
 - Final examination 75%
- Combined level 10/level 11 course
 - Extra project at level 11

0. Organisational Matters

- Literature

- **Course Textbook (required)**

- George Coulouris, Jean Dollimore and Tim Kindberg, *Distributed Systems: Concepts and Design*, 4th edition, Addison-Wesley, 2005.

- web site: <http://www.cdk4.net/>

- Reference Texts

- Andrew S. Tanenbaum and Maarten Van Steen, *Distributed Systems: Principles and Paradigms*, Prentice Hall, September 2001

- web site: <http://www.cs.vu.nl/~ast/books/ds1/>

- Nancy A. Lynch, *Distributed Algorithms*, Morgan Kaufmann, 1996

- Andrew S. Tanenbaum, *Computer Networks*, 3rd ed., Prentice-Hall, 1996.

- R. Chow and T. Johnson, *Distributed Operating systems and Algorithms*, Addison-Wesley, 1997.

0. Course Overview

- I. Introduction
- II. Fundamental Concepts of Distributed Systems
 - Architecture models; network architectures: OSI, Internet and LANs; interprocess communication
- III. Time and Global States
 - Clocks and concepts of time; Event ordering; Synchronization; Global states
- IV. Coordination
 - Distributed mutual exclusion; Multicast; Group communication, Byzantine problems (consensus)
- V. Distribution and Operating Systems
 - Protection mechanisms; Processes and threads; Networked OS; Distributed and Network File Systems (NFSs)

0. Course Overview

- V. Distribution and Operating Systems
 - Protection mechanisms; Processes and threads; Networked OS; Distributed and Network File Systems (NFSs)
- VI. Peer to peer systems
 - Routing in P2P, OceanStore, Bittorrent, OneSwarm, Ants P2P, Tor, Freenet, I2P
- VII. Security
 - Security concepts; Cryptographic algorithms; Digital signatures; Authentication; Secure Sockets