Chapter 0
Introduction

Distributed Systems

SS 2015

Fabian Kuhn

Organization

Part I : Fabian Kuhn
- Theoretical basics of distributed systems
- Coordination and agreement
- Faults and asynchrony
- Global states and time
- Impossibility proofs

Part II : Peter Fischer
- More applied aspects of distributed systems
- System architectures
- Replication, reliability
- Distributed transactions
- Consistency

Web Page

http://ac.informatik.uni-freiburg.de

→ Teaching → SS 2015 → Distributed Systems

- We will publish all important information there!
  - Check in the next days for additional information on the exercises.

- Check the web page regularly!

- Recordings will be put online
  - Sometimes possibly with some delay…

- Some information will be password protected
  - password will be sent by email to all students registered for the course

Lectures – Part I

Lecture (101-01-014/16)

- Tuesday 14:15 – 16:00

- Thursday 14:15 – 16:00

Exercise Tutorials (101-01-014/16)

- Usually Thursday 14:15 – 16:00 (every second week)

- Exact schedule will be published on the course webpage

Language

- Lectures will be in English

Recordings

- Most lectures will be recorded

- **No guarantee that there's always a recording!**

Exercises & Exam

General Information

- There will be (theoretical) exercises to practice the material
  - We try to provide **sample solutions** (not always guaranteed)
- 1 problem every two weeks
- No exercise points needed to be admitted to the exam
- **Doing exercises is however strongly encouraged!**
- If you hand in solutions in time, we will correct them
- It is OK to work in groups
  - But if you do, only hand in one solution!
- **First exercise tutorial:** Thu, April 30, 14:15 – 16:00 (next week)
- Further details will be published soon on the webpage

Exam:

- BSc: oral, MSc: written or oral (t.b.d. soon)

Related Courses

Basic courses:

- Operating systems / Betriebsystems (Systeme I)
  - required

- Computer Networks / Rechnernetze (Systeme II)

Advanced courses:

- Network Algorithms (Fabian Kuhn)
  - distributed algorithms for networked distributed systems
  - more focus on algorithmic / combinatorial / graph theoretic aspects
  - this semester on Tuesdays (10:15 – 14:00)

- Distributed Algorithms Seminar (Fabian Kuhn)

- Systems Infrastructure for Data Science (Peter Fischer)

Literature 1ˢᵗ part (Theory)
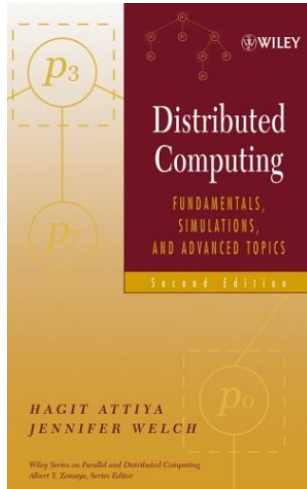
**Distributed Computing
Fundamentals, Simulations, and Advanced Topics**
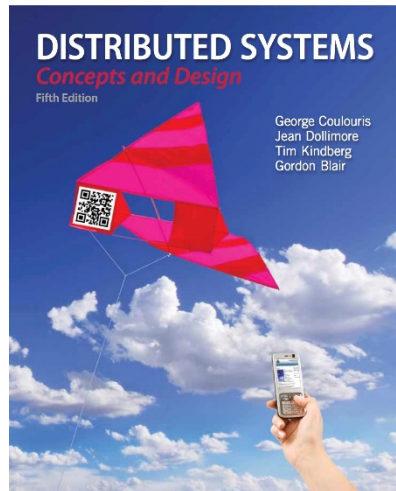(second edition)

Hagit Attiya and Jennifer Welch
John Wiley and Sonc, Inc., 2004
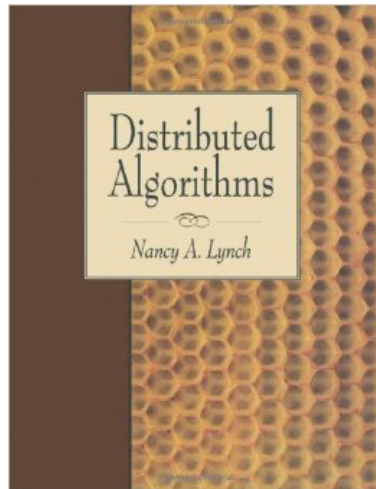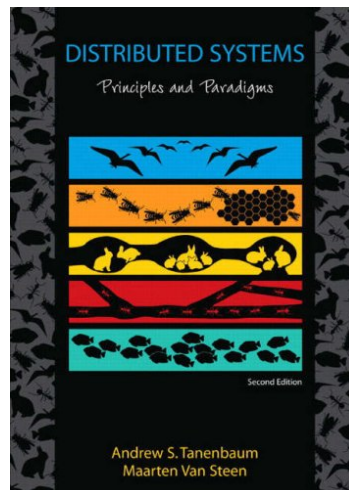
Distributed Algorithms

Nancy Lynch
Morgan Kaufmann Publishers, Inc., 1996

Literature (Applied)

Distributed Systems
Concepts and Design
(fifth edition)

G. Coulouris, J. Dollimore, T. Kindberg, G Blair
Pearson, 2012

Distributed Systems
Principles and Paradigms
(second edition)

A. S. Tanenbaum and M. Van Steen
Pearson, 2006

Additional Literature

Relevant courses on the topic

- **Lecture notes by James Aspnes (Yale U.):**

  Theory of Distributed Systems 2014
  http://www.cs.yale.edu/homes/aspnes/classes/465/notes.pdf
  - based on book by [Attiya, Welch 04]

- **Lecture material by Nancy Lynch (MIT):**

  Distributed Algorithms 2009
  http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-852j-distributed-algorithms-fall-2009/
  - Based on book by [Lynch 98]

Potential additional material will be published on the webpage.