

# Distributed Systems: Course Organization

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Distributed Systems  
a.y. 2015/16  
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# Goal

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The goal of the course is to enable the student to understand the foundations of distributed systems and to be able to design and develop such systems.

Build Distributed Systems that are:



correctly functioning



performance-oriented



and reliable

Design principles of distributed systems and their application to the modern networked environment



Understand fundamental distributed systems theory



Develop for Internet/Web/Pervasive environments

# Outline (tentative)

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## Basics:

- Characterization of Distributed Systems

- System Models

- Interprocess Communication

## Middleware:

- Distributed Objects and Remote Invocation (*recap*)

- Name Services

## Distributed Algorithms:

- Time, Coordination and Agreement

## System Infrastructure:

- Distributed File System

- Distributed Shared Memory

- Replication

- P2P overlays

# Context

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Bachelor

Operating Systems

Net Computing

Master

Distributed Systems

Web and Cloud Computing

Ubiquitous Computing

*(biennial)*

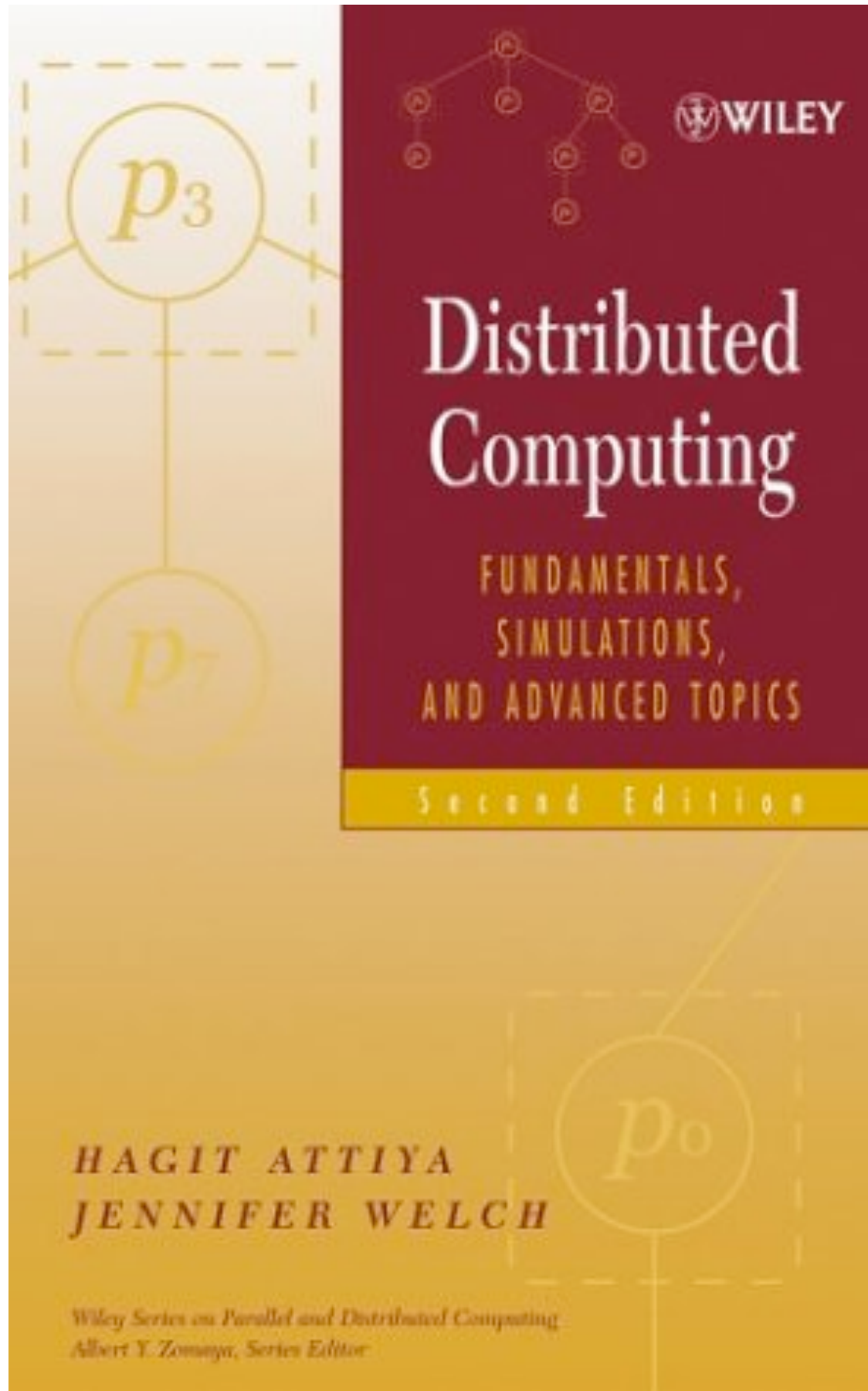


# Schedule (*tentative*)

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- 31/8 Intro, DS, Models
- 3/9 Time: Logical
- 7/9 Graph Algorithms
- 10/9 Coordination
- 14/9 Multicast
- 17/9 Time: Physical (IG)
- 21/9 Naming
- 24/9 Project feedback session
- 28/9 Fault tolerance
- 1/10 Distributed File Systems (IG)
- 5/10 Replication
- 8/9 P2P overlays
- 12/10 Exam preparation
- 15/10 DSM (IG)

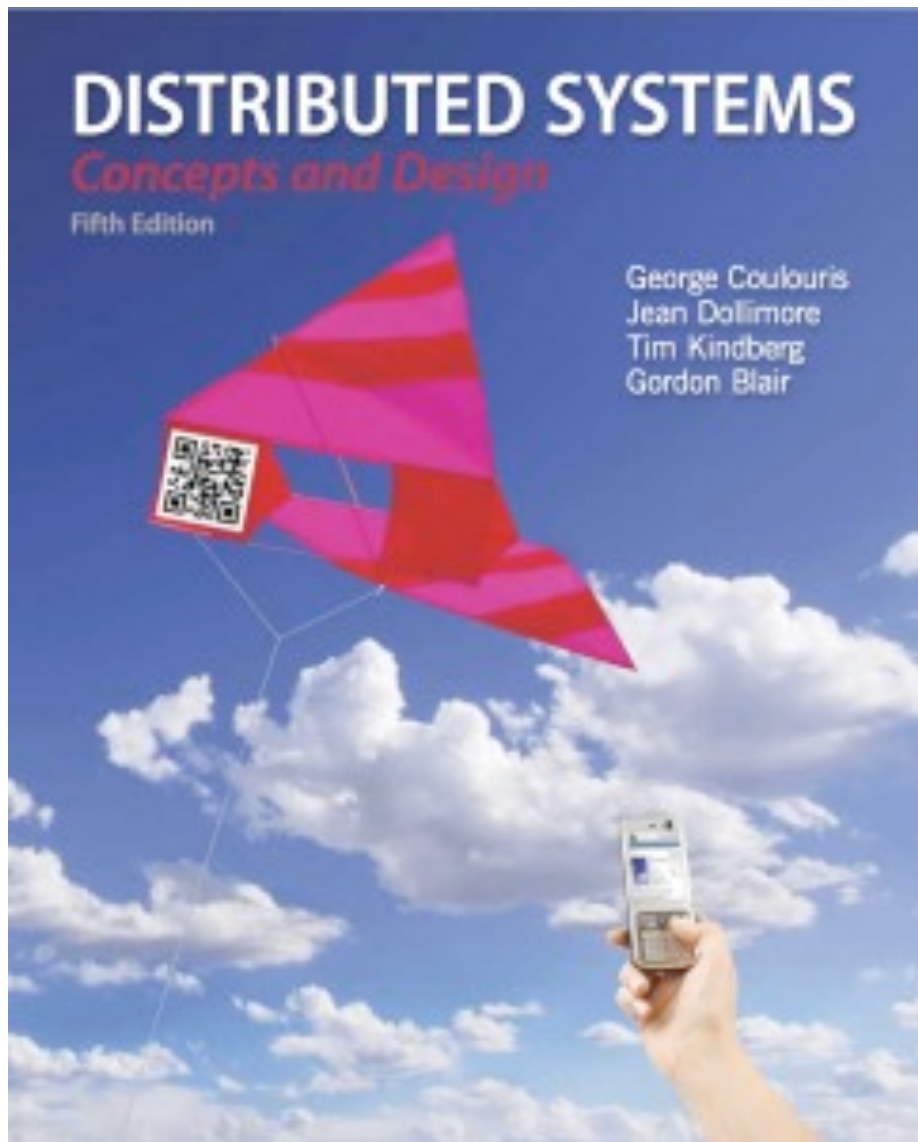
## Adopted book



Distributed Computing  
Fundamentals,  
Simulations, and  
Advanced Topics  
Second Edition  
By Hagit Attiya and  
Jennifer Welch  
Published by John Wiley  
and Sons, Inc.  
ISBN 0-471-45324-2

# Suggested book

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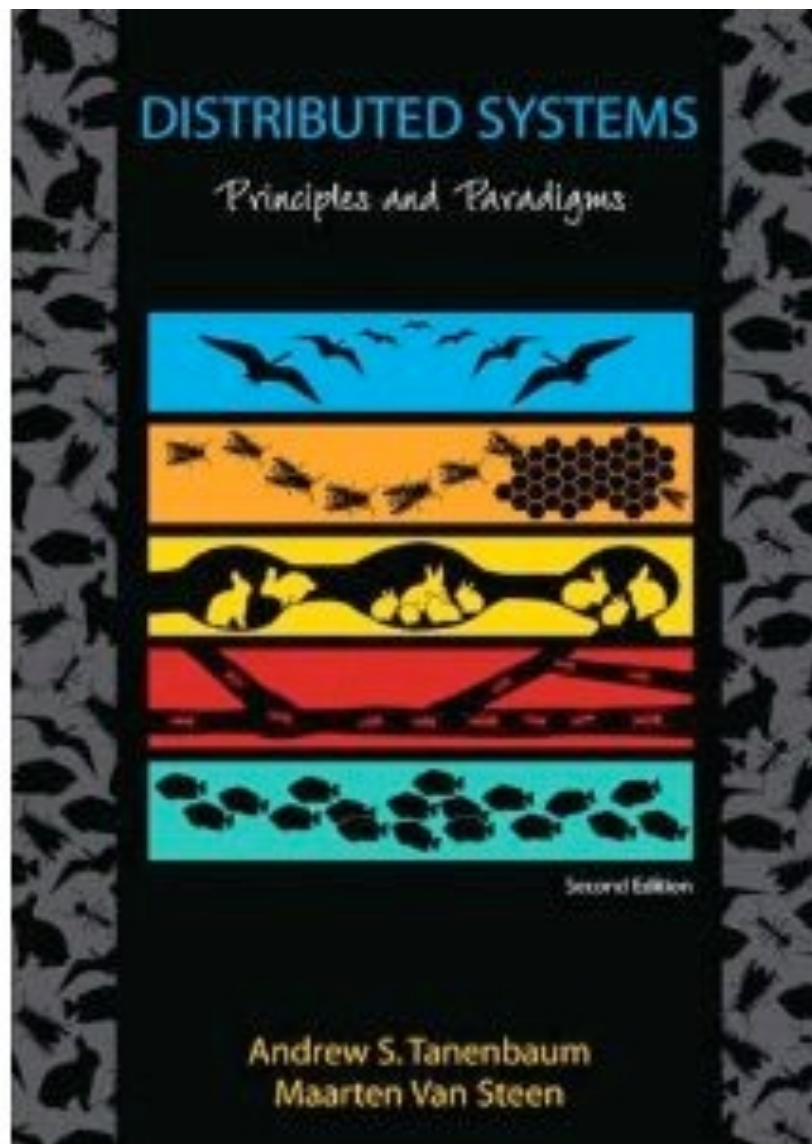


Distributed Systems: Concepts and  
Design (5th Edition)  
by George Coulouris, Jean  
Dollimore, Tim Kindberg  
and Gordon Blair



# Another book

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Distributed Systems: Principles and  
Paradigms (2nd Edition)

Andrew S. Tanenbaum & Maarten  
Van Steen



# Nestor

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- Slides will be available on Nestor in pdf format
- Please check on Nestor regularly for announcements, schedule changes and so on

# Examination

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- A set of open questions on the whole course content (50% of the mark)
- Project (50% of the mark)
- Registering for the exam in advance is mandatory (no walking in)

# Project

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- Teams of 3 people
- By Sep. 6th, 2015 one page project proposal sent via email
- By Sep. 12th, 2015 project proposal approved
- By Oct. 25th, 2015 project report submitted
- After that a demo given to the instructors: 10 min. in front of the PC with all team members present, 5 minutes illustration of the project/demo, 5 minutes questions (other team can assist, but don't have to)
- Demo date will be 27th of October

# Team formation form

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#	name	lastname		Algorithmic skills	Programming skills	English writing	Master topic	Desired teammates	DO NOT FILL
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# Contents

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- A project should consist of a distributed implementation with the following minimal requirements (must be present):
  1. Having a voting algorithm
  2. Dynamic discovery of hosts
  3. Some form of ordered reliable multicast
  4. Being tolerant to crash faults (omission faults and byzantine faults give a higher mark)
- Writing a short report of 4.000-6000 words structured as follows:
  - 1.Context/background
  - 2.State of the Art
  - 3.Problem statement
  - 4.Relation to Distributed Systems
  - 5.Solution details
  - 6.Results

# How projects are evaluated

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	Mark
<b>Project Report</b>	
<i>Clarity</i>	2
<i>Context</i>	2
<i>State of the Art</i>	2
<i>Problem statement</i>	2
<i>Description of solution</i>	2
	<b>2</b>
<b>Demo</b>	
<i>Clarity</i>	7
<i>Organization</i>	8
<i>Q&amp;A and discussion</i>	9
	<b>8</b>
<b>Project Overall</b>	
<i>Relevance for DS</i>	8
<i>Use of DS Algorithms and Techniques</i>	8
<i>Reconfigurability-Dynamics</i>	8
<i>Fault tolerance</i>	8
<i>Quality/difficulty of implementation</i>	8
<i>Meeting deadlines</i>	8
	<b>8</b>
<b>Final Mark</b>	<b>6,5</b>



# Project Topic

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- You can propose your own
- It must be related to the topic of the course
- The relation has to be made explicit and your project