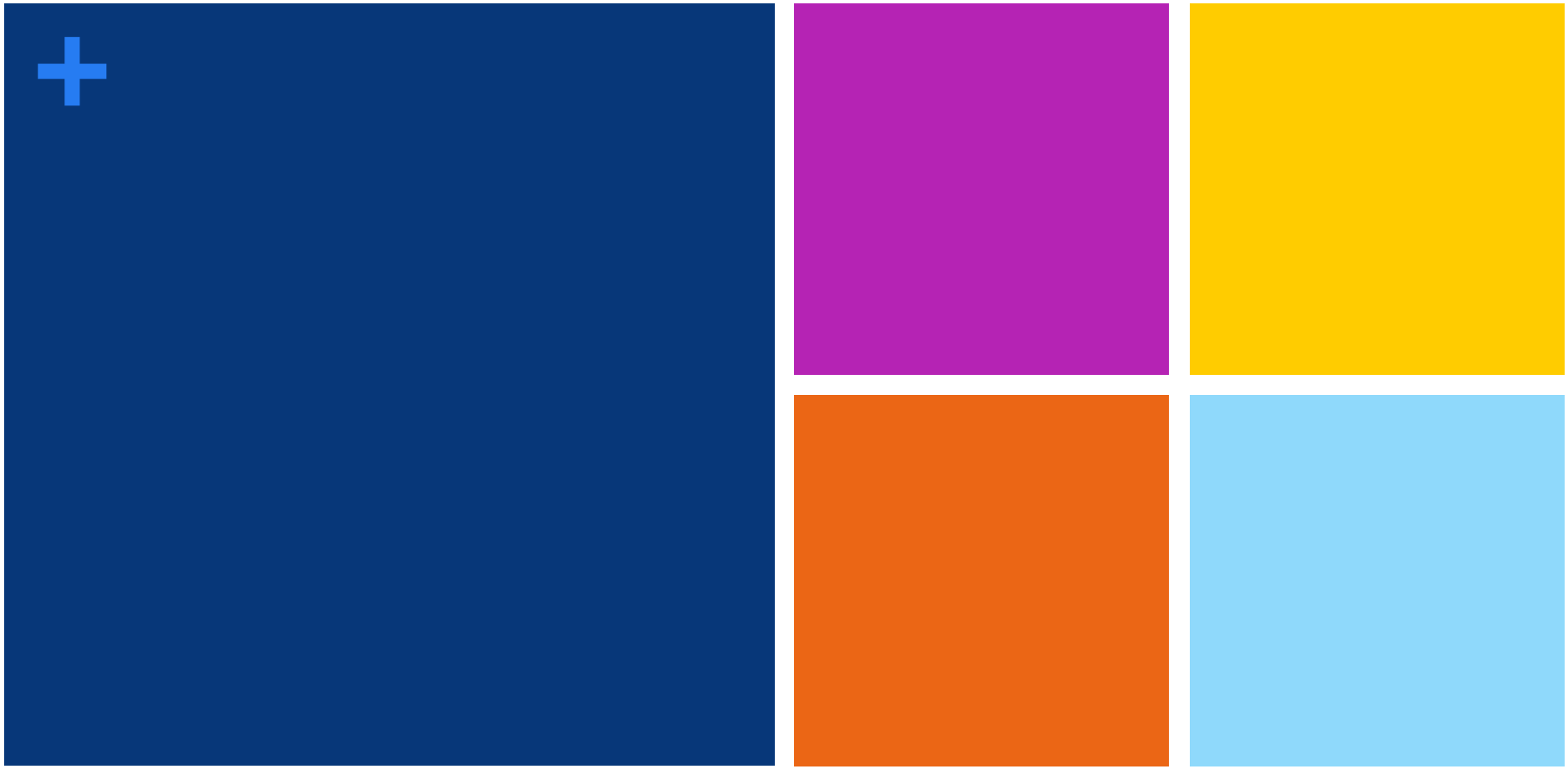


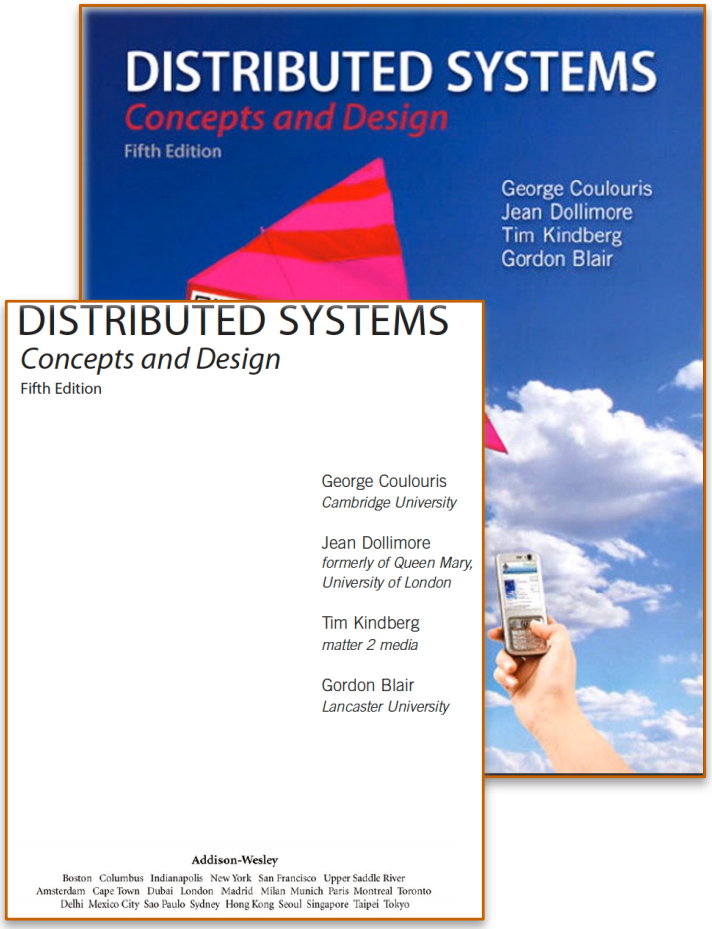
Distributed Systems

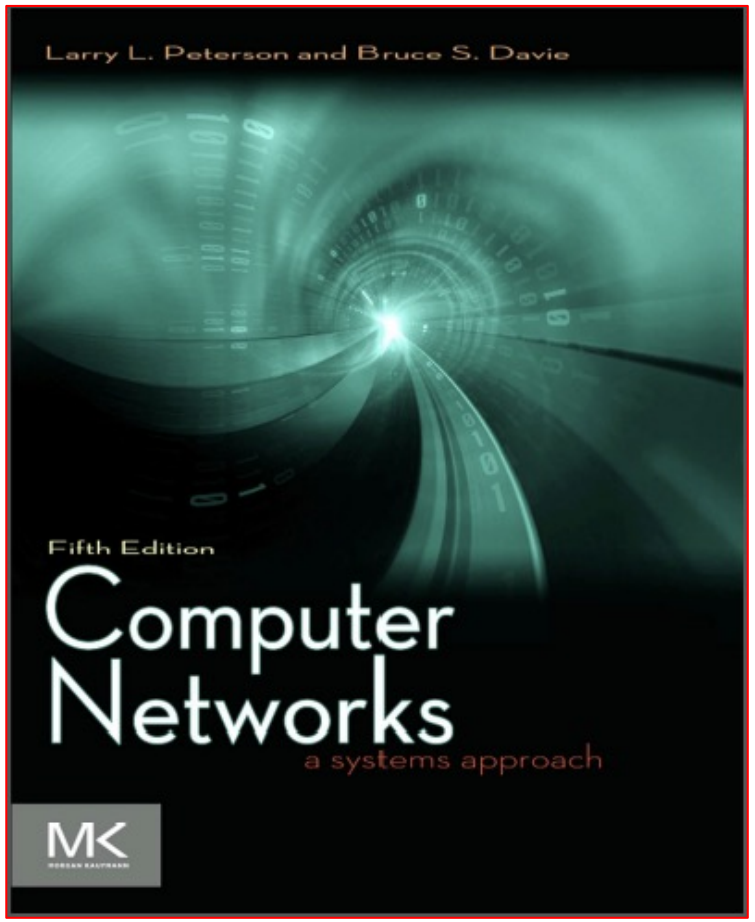
Academic Year 2022-23

Faculty

- **José María Foces Morán**
  - ***Part I (Architecture of Distributed Systems, Sept-Nov)***
  - ***Contact:***
    - ***For administrative maters: chema.foces@unileon.es***
    - ***For technical matters (Doubts, difficulties with the material): Course Forum (agora)***
  - Technology II bldg., office 363, phone ext. 5390
  - Tutor assistance hours:
    - Habitually, office hours will be held on tuesdays from 11:30 thru 12:30
    - Office no. 363/Lab B6
  - Notes, presentations, past exams, exercises, etc: Available Mondays and Tuesdays, in Lab sessions only:
    - ***http://paloalto.unileon.es/ds***
- **Antonio Sánchez Vargas**
  - ***Part II (Hadoop, Nov-Jan (2022)***

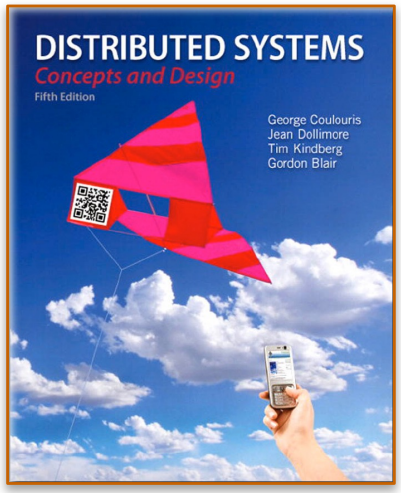
Main Reference books

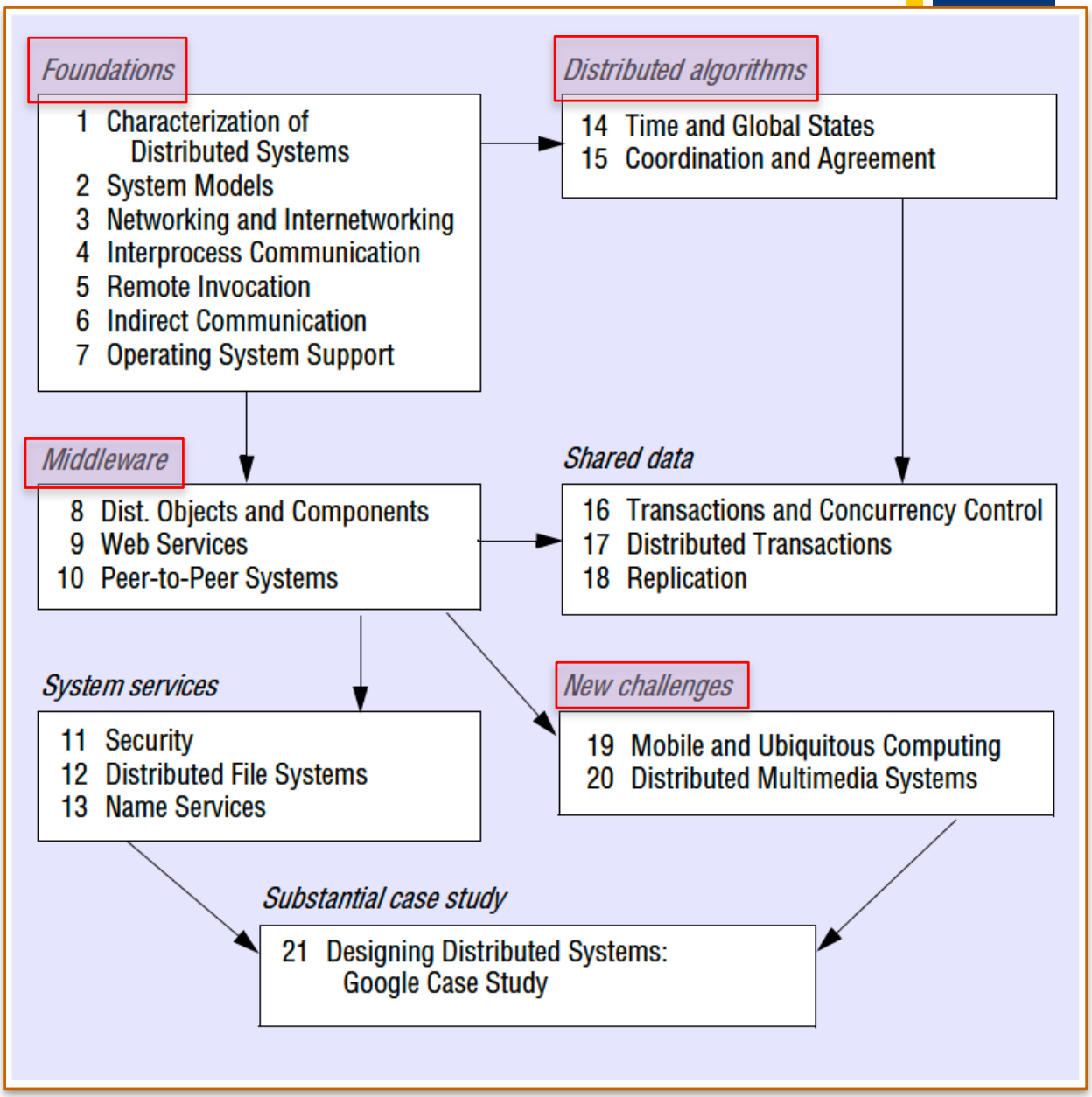




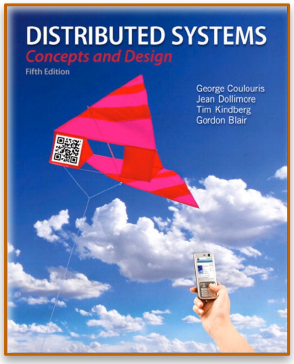
Course contents

- Main blocks
  1. Foundation
  2. Architecture of DS
  3. Middleware
  4. Distributed computing with Hadoop, etc.





Course contents



1. Foundation

a) Networking summary

b) Faults in distributed systems: Reliable transmission with TCP

c) Socket programming

d) Clocks and states: Cristian's algorithm, clock synchronization with ICMP and NTP, Lamport clocks

2. Architecture of DS

a) Layered and tiered models

b) The C/S and peer-to-peer models

3. **Middleware, general RPC:**

Java RMI

Distributed objects

4. Distributed computing technologies (Hadoop and others)

a) Concepts and possibilities of today's distributed system technologies

Exams and homework

- Participation
- Note taking
- Attendance to lectures AND labs!

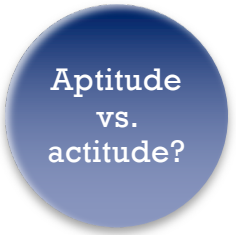
Exams

- **Term Exam 1 (TE1)**
  - 21/Nov/2022
- **TE2**
  - 9/Jan/2022

Homework

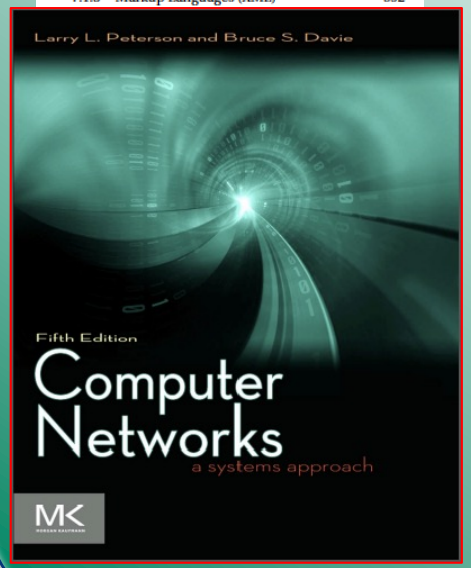
- Weekly questionnaires
- Questionnaire solutions published shortly after Q. pub. date

- Set of exercises
- (Homework#1)
- Final practice (DSPro Homework#2)
- Lab Book (Homework #3)

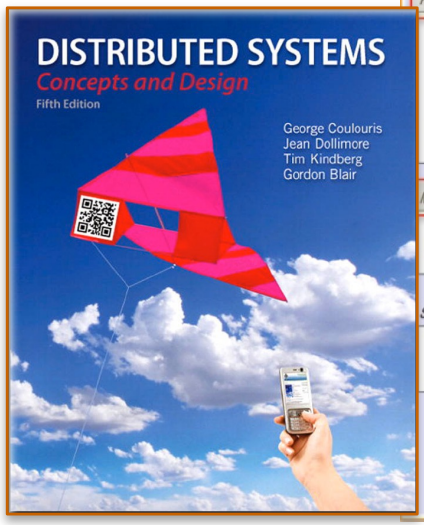


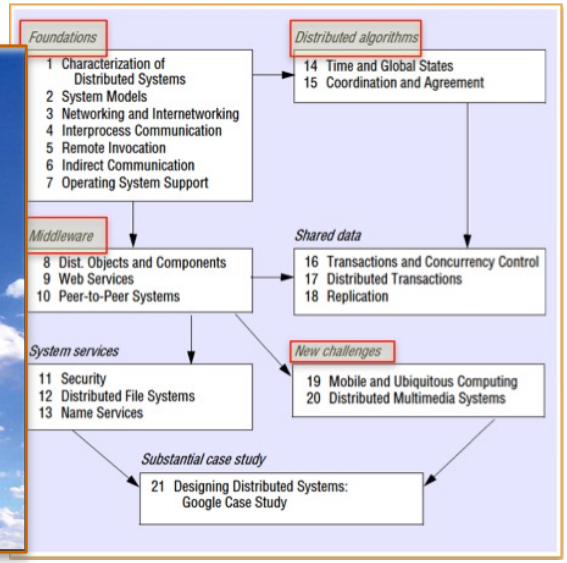
Equally important

Chapters of each book



- **Topic blocks:**
  1. Foundations
  2. Architecture
  3. Middleware
  4. Distributed computing
- We will inform you about the book section relevant to each book chapter





Languages and OS for practicals

- **Linux (Preferrably Ubuntu or Debian) or UNIX (OS-X)**
- **Windows ≈**
- **C and Java SE**
- **Lab B6 (Networks and Distributed Systems)**
  - Raw and Berkeley Sockets
  - Client/Server with Sockets and RMI (Remote Method Invocation)
  - Remote Objects, concurrency
  - Protocol Analysis for DS (Distributed Systems)
    - IP, TCP, UDP, http, NTP
  - Real-time clock synchronization with Raw Sockets
- **Lab B3 (ATC)**
  - Distributed Programming with Hadoop

Schedule and locations

- **Lectures: A single, on-site attendance group (A)**
  - **Classroom Building, classroom no. 18**
  - **Mondays 10:00 – 12:00**
- **Problem and exercises sessions (B1)**
  - **Embedded in Lab sessions (B3)**
- **Lab Practices (B3)**
  - **Technology II bldg., Lab B6**
  - **4 groups every week**
    - G1 (Mondays)12:00 – 14:00
    - G2 16:00 – 18:00
    - ~~G3 18:00 – 20:00~~
    - G4 (Tuesdays) 13:00 – 15:00

Assessment

- Term Exam 1
  - Passing this exam is a **necessary condition** for passing the course
- Term Exam 2
  - Passing this exam is a **necessary condition** for passing the course
- ***If both exams are passed:***
  - Exams weight is 72%
  - Regular lab attendance + LabBook: 15%
  - Final Practice (DSPro): 10%
  - Other: 3% (Attendance, etc)

Questions?