Summary
The course introduces parallel programming models, algorithms, and data structures, map-reduce frameworks and their use for data analysis, as well as shared-memory concurrency.

Content
See https://lara.epfl.ch/w/parcon17:top
- Parallel programming & execution models
- Functional parallelism
- Data-level parallelism
- Threads and fork/join parallelism
- Synchronization
- Threads and Shared Memory in Java
- Futures
- Parallel programming using Apache Spark

Keywords
Parallelism, threads, synchronization, locks, memory models.

Learning Prerequisites
Required courses
- Functional programming (CS-210)
- Algorithms (CS-250)
- Computer Architecture (CS-208)

Recommended courses
System oriented programming (CS-207)

Important concepts to start the course
Functional programming and functional data structures
Algorithms and data structures

Learning Outcomes
By the end of the course, the student must be able to:
• Construct parallel software.
• Perform tuning parallel software.

Teaching methods
Ex cathedra, labs, exercises

Assessment methods
With continuous control

Resources
• Notes/Handbook
• Lecture notes, copies of the slides