EPFL

CS-212　　　**Reactive programming**

Cursus	Sem.	Type
Communication systems	BA4	Opt.
Computer science	BA4	Opt.

Language of teaching	English
Credits	2
Session	Summer
Semester	Spring
Exam	During the semester
Workload	60h
Weeks	14
Hours	**2 weekly**
Courses	1 weekly
Exercises	1 weekly
Number of positions	

Remark

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Summary

The course introduces reactive programming. We present notions of signals, futures, and actors.

Content

Parallel programming
- parallel operations on sequences and sets
- parallel sorting, merging, and medians
- parallel operations on strings
- basics of Map-Reduce, along with commutativity and associativity conditions

Reactive Programming
- Futures
- Reactive streams
- Actor model of concurrency
- Supervision and failure handling
- Reliable message delivery and management of conversational state in actors

Learning Prerequisites

Required courses

- Functional programming (CS-210)
- Algorithms (CS-250)

Recommended courses

- Concurrency (CS-206)
- 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
- Produce reactive distributed software

Transversal skills

- Resolve conflicts in ways that are productive for the task and the people concerned.
- Respect relevant legal guidelines and ethical codes for the profession.
- Demonstrate the capacity for critical thinking
- Use both general and domain specific IT resources and tools
- Use a work methodology appropriate to the task.
- Access and evaluate appropriate sources of information.

Teaching methods

- Ex catedra
- MOOC
- Exercises

Resources

Bibliography

- **Programming in Scala 2nd editio,
  http://www.chegg.com/textbooks/programming-in-scala-2nd-edition-9780981531649-0981531644?trackid=mqNK**