EPFL

CS-712 | **Topics on Datacenter Design (2019)**

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Cursus	Sem.	Type
Computer and Communication Sciences		Obl.

Language of teaching	English
Credits	4
Session	
Exam	Oral presentation
Workload	120h
Hours	**56**
Courses	28
TP	28
Number of positions	

Remark

Next time: unknown

Summary

Modern datacenters with thousands of servers and multi-megawatt power budgets form the backbone of our digital universe. In this course, we will survey a broad and comprehensive spectrum of datacenter design topics from workloads, to server architecture and infrastructure.

Content

The course will use the primer from ClayPool lecture series on Warehouse-Scale Computing by Barrosso and Hoelzle, and technical research papers from recent years in venues corresponding to the topic. The course will be run as a seminar series with student presentations followed by an in-class discussion. The students will be graded based on presentations and short reviews written for each reading assignment.

Datacenter basics: computing at scale of tens of thousands of servers
Quality of service, energy proportionality and total cost of ownership
Workloads
Programming paradigms
System software
Virtualization
Networking
Storage systems
Processors and memory systems
Resource management
Infrastructure: power distribution and cooling

Keywords

datacenter, warehouse-scale computing, scale-out

Learning Prerequisites

Recommended courses

Computer Systems

Assessment methods

Oral presentation

Resources

Ressources en bibliothèque

- The Datacenter as a Computer / Barroso

Websites

- http://parsa.epfl.ch/courses/cs712/