Module Description

Cloud Computing

General Information

Number of ECTS Credits

3

Abbreviation

TSM_ClComp

Version

2.12.2016

Responsible of module

Prof. Dr. Thomas Michael Bohnert, ZHAW

Language

	Lausanne	Bern	Zurich
Instruction	☐ E ☒ F	☐ D ☐ E ☐ F	☐ D ☒ E
Documentation	☒ E ☐ F	☐ D ☐ E ☐ F	☐ D ☒ E
Examination	☒ E ☒ F	☐ D ☐ E ☐ F	☐ D ☒ E

Module category

☐ Fundamental theoretical principles - FTP
☒ Technical/scientific specialization module - TSM
☐ Context module - CM

Lessons

☒ 2 lecture periods and 1 tutorial period per week

Brief course description of module objectives and content

Lecture on advanced topics in the domain of Cloud Computing, more precisely covering use, operations, development of and for IaaS and PaaS, as well as developing applications natively for the cloud.

Aims, content, methods

Learning objectives and acquired competencies

Conceptual understanding of the principles and architectural design of IaaS and PaaS services, as well as concrete implementations/frameworks.
Ability to operate and use IaaS-frameworks. Ability to operate and use PaaS-frameworks.
Understanding of IaaS and PaaS management APIs.
Ability to design services and service-oriented applications natively for the cloud.
Ability to leverage features of the cloud, that is on-demand, self-service, elasticity, multi-tenancy, metered service, broadband network access.
Ability to evaluate the economic, legal and technological advantages of cloud as well as inherent limitations.

Contents of module with emphasis on teaching content

Per week, Lectures two times 45m, Tutorial 45m

Topics

- Welcome and CC-Definitions, Principles, Services and Deployment Models
- IaaS and Amazon Web Services (AWS)
- DC Architecture
- OpenStack, Architecture, Services, Usage
- Cloud Compute Services - Hypervisors and Containers
- Cloud Storage - Basic Concepts, Block, File and Object Storage Services
- Cloud Networking - Software Defined Networking
- Cloud Security
- PaaS and Google Application Engine (GAE)
- CloudFoundry, Architecture, Services, Usage
- Persistence Services, NoSQL DBaaS
- Continuous Deployment
- Cloud Standards and Interoperability
- Cloud-native Applications / Cloud-based Architecture

Teaching and learning methods

2 Lectures, 1 tutorial session per week

Self-study based on lecture material and literatures (papers, books)

Prerequisites, previous knowledge, entrance competencies

Basic understanding of software and systems engineering, basic usage of Linux, communication technologies/networking.

Literature

Assessment

Certification requirements for final examinations (conditions for attestation)

Nothing / None

Written module examination

Duration of exam:	120 minutes
Permissible aids:	1 A4-Sheet of hand-written notes