

Modul – No.	786	Mandatory	
Module name	Cloud Computing and Big Data		
Module coordinator	Prof. Dr. Dotsenko		
Title	Cloud Computing and Big Data		
Title of examination	Cloud Computing and Big Data		
Semester	2		
Course Type	Language	Lecture including exercises	English
SWS/ ECTS/ Workload	3/1/0	5	150
Requirements for attendance	None		

1. Content and objectives

Content:

The module provide an overview of the cloud technology and introduce key concepts of Big Data and most common Big Data tools.

- Cloud concepts and cloud service models
- Overview of the container technology
- Elements of data engineering
- Big data concepts including streaming, partitioning and scaling
- NoSQL databases, BASE transactions
- MapReduce algorithm
- Algorithms and architectures for real-time data processing
- Overview of tools and frameworks for data engineering and visualization
- Scenarios for the use of artificial intelligence and machine learning
- Case studies for cloud-based IoT solutions
- Current trends in cloud computing and outlook for the coming years

Objectives:

On successfully completing the module the students will be able

- To critically assess the need for a cloud solution and select the suitable service model
- To plan cloud deployment strategies
- To identify suitable big data solution for specific requirements
- To contrast traditional and NoSQL databases
- To demonstrate knowledge of modern tools for data collection, cleansing and integration, data visualization

Recommended Literature:

- Kleppmann M., Designing Data-Intensive Applications. 2017, O'Reilly Media
- Indrasiri K, Suhothayan S., Design Patterns for Cloud Native Applications, 2021, O'Reilly Media
- Modi R., Lee J., Skaria R.. Azure for Architects, 3rd Ed, 2020, Packt Publishing

2. Methods of instructions

Lecture with integrated exercises

Assignments with presentation and discussion

3. Requirements for attendance

No course specific requirements.

4. Usability of this module

The module is offered as mandatory course in the master study course „Computer Engineering for IoT Systems“ as well as elective course in other master courses of the Engineering Department.

5. Requirements for assessment

25 % assignment with presentation and discussion during the course

75 % written exam

6. ECTS credits

5 ECTS credits

7. Frequency of offer

Every summer term

8. Work load

150 h of total work load, from:

- 45 h of presence at lectures/exercises
- 55 h of self-study
- 50 h of preparation for examination

9. Duration of module

1 semester