Course Unit Descriptor

Study Programme: Information Technology

Course Unit Title: Distributed information systems

Course Unit Code: DAS008

Name of Lecturer(s): Assistant professor Ljubica Kazi, PhD, Professor Biljana Radulovic, PhD

Type and Level of Studies: Master Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Summer

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 4

Prerequisites: None

Course Aims:

Aim of the course is for students to master the methodology of distributed information systems development at the conceptual and implementation level.

Learning Outcomes:

Mastering the techniques and methods of modeling and implementation of distributed information systems, particularly in the domain of distributed databases, multi-layered and distributed software processing.

Syllabus:

Theory

Distributed systems as a broader category, types of distributed systems (Distributed computing systems, Distributed information systems, Distributed Embedded Systems). Cloud computing. Hardware, devices (wireless, GPS, mobile devices) and distributed operating systems.

ISO / OSI multi-layered architecture,Client-server architecture and distributed information sistems.

Distributed databases - horizotal and vertical partitioning, partitions catalogue, database recovery. Distributed transactions with two-phases commit.

Multi-layered software architecture based on software components with object-oriented programming

Distributed software processing – using software services SOAP and REST, data formats for interoperability support (XML, JSON)

Applicative areas – Internet of Things, Geographical Information Systems.

Practice

Student should implement a software prototype (such as web application) within modern software development environment with multi-layered architecture, distributed databases support (horizontal and vertical partitioning databases managed by use of partitions catalogue), using data formats for interoperability support and distributed software processing (by creating and integration with web services).

Required Reading:

1. George Coulouris, Jean Dollimore, Tim Kindberg, Gordon Blair: "Distributed Systems: Concepts and Design", Addison Wesley, 2012.
2. Tanenbaum A, Van Steen M: “Distributed systems, Principles and Paradigms”, VrijeUniversiteit, Amsterdam, Pearson Prentice Hall, 2007.
3. Ajay D. Kshemkalyani, Mukesh Singhal: "Distributed Computing, Principles, Algorithms, and Systems", Cambridge University Press 2008
4. Mogin Pavle, Lukovic Ivan, Govedarica Miro: “Principi projektovanja baza podataka”, Fakultet tehničkih nauka, Novi Sad, 2000. (In Serbian)
5. Ljubica Kazi, Biljana Radulović: „Uvod u distribuirane informacione sisteme – praktikum za vežbe“, 2014. (In Serbian)

Weekly Contact Hours: 4	**Lectures:** 2	**Practical work:** 2

Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	10	oral exam	30
Seminar work	60		