Course Unit Descriptor

Study Programme: Information Technologies

Course Unit Title: NoSQL Databases

Course Unit Code: IT605

Name of Lecturer(s): Danijela Boberić Krstićev

Type and Level of Studies: Bachelor Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

Language of instruction: Serbian (primary), English (secondary)

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

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

Introduction with basic principles and concepts of non-relational databases.

Learning Outcomes:

At the end of the course, it is expected that students demonstrate a clear understanding of the theoretical basis of non-relational databases and are able to develop application based on non-relational database

Syllabus:

Theory

Introduction with basic principles and concepts of non-relational databases. Discussing problems of large databases and problem of scalability. Introduction to different kind of NoSQL databases. Key-value databases. Column - oriented databases. Document - oriented databases. Graph databases. CRUD operations. Query languages. Indexing. Managing integrity of data. NoSQL databases and cloud computing. Performances of NoSQL databases.

Practice

Analysis of concrete implementation of different kind of NoSQL databases such as MongoDB (document - oriented database), HBase (column - oriented database) and Neo4J (graph - oriented databases)

Required Reading:

1. Pramod J. Sadalage, Martin Fowler, "NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence", Addison-Wesley Professional, 2012
2. Eric Redmond, Jim R. Wilson, "Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement", Pragmatic Bookshelf, 2012

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

Teaching Methods:

In the lectures, classical teaching methods using video beam are used to present the topics. In practice, classical teaching methods, using video beam and computers with the necessary software installed are used to practically train skills by getting to know the recommended tools. The premise for successful exercises is the existence of a sufficient number of computers so that each student can work individually.

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Project	70	oral exam	30