

Modern Database Systems

Course title:

Modern Database Systems

Course timing:	May 17, 2017
Mode of study:	Lectures 6hrs, Practice 4hrs, Total 10 hrs.
Study materials:	Announced May 5, 2017 on http://edu.susu.ru

Prerequisites for entering the course:

Basics in database management systems, familiarity with markup languages and SQL
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Course summary:

Course is devoted to modern technologies of database management systems (NoSQL, parallel, column-oriented, graph databases) which can be beneficially used in Software Engineering.

Course is lectured by *Assoc. Prof. Alina Latipova* (SUSU, South Ural State University, Chelyabinsk, Russia). Alina Latipova is also vice-dean of High School of Electrical Engineering and Computer Science of SUSU. Her research interests include enterprise information systems and operation research.

Course outline:

#	Title	Duration	Summary
Lectures			
1	Overview of modern DBMS	2 hours	Classification of modern DBMS, market analysis, challenges of modern times
2	Relational vs. NoSQL DBMS	2 hours	Fundamentals of database and schema design for relational DBMS, schema normalization, properties of transactions. Overview of modern NoSQL DBMS, pros and cons of NoSQL, classification of NoSQL DBMS, CAP theorem, ACID vs. BASE
4	Document, column-oriented, graph DBMS	2 hours	Main features, advantages and drawbacks
Practice			
1	Modern DBMS	4 hours	Developing different types of data structure (normalized relational, JSON/BSON, XML), retrieving data using queries

Reading:

Carlos Coronel and Steven Morris. Database Systems: Design, Implementation, & Management. 12th ed. Cengage Learning, 2017.

Ian Robinson, Jim Webber and Emil Eifrem. Graph Databases. Neo Technology, Inc., 2015.

Software:

PostgreSQL – <https://www.postgresql.org/download/>

MongoDB – <https://www.mongodb.com/download-center?jmp=nav#community>

Neo4j – <https://neo4j.com/download/?ref=home>

Course timetable:

Date	Time	Classes
May 17 th	9:00-13:00	Lectures
	14:00-17:00	Practice