

<b>Study program: Modern computer technologies</b>			
<b>Course title:</b> Databases			
<b>Professor/assistant:</b> Dušan M. Stefanović			
<b>Type of course:</b> compulsory/elective			
<b>ECTS credits:</b> 7			
<b>Pre-requisites:</b> none			
<b>Aims of the course:</b> The objective of the course is to familiarize students with the basic information systems, their elements and principles. Students should acquire knowledge and skills working with databases, database design, realization and maintenance through mastering MS SQL and MySQL. In addition, the aim is to train students for practical design of a database schema through ER models, translating into a relational model, and performing tasks within relational databases. Introduction to the query language (SQL) used in relational databases.			
<b>Learning outcomes:</b> Knowledge of modern databases, database management systems, basic development and design models of information systems, database languages and their basic elements, the basis of relational algebra and normalization; students get one universal tool for solving the most complex data processing tasks from the real world. Students will be able to project, build and maintain a database, administer its rights and privileges and take care of the security and consistency of the database.			
<b>Syllabus</b>			
<u>Theoretical part</u> Introduction to information systems. Modern databases. Database system. Database Management System. Database structure. Database languages. The term data. Basics of relational algebra. Code rules. Normal forms and normalization. Synthesis of the relational model. ER model. SQL language. Clause WHERE, clause ORDER BY. Use NULL values. Clause GROUP BY. Join Query over multiple tables. Updating and deleting the records in a database. Systems for database recovery, security and testing.			
<u>Practical part</u> It follows methodical units of theoretical classes working on MySQL DBMS and deals with defining the basic elements of the database over the projected part of the information system, solving the problems of relational algebra, applying normal forms - normalization over the real entity groups within a relational model, model synthesis and mapping into an ER model, and programming the projected system using SQL queries.			
<b>Literature</b>			
<ol style="list-style-type: none"> <li>1. Alimpije Veljković, Miroljub Zahjoranski, " <i>Introduction to databases</i>", CET , 2014.</li> <li>2. S. Đorđević Kajan, L. Stojmenov, " <i>Structures and databases</i>", Electronic faculty, Niš, 2004.</li> <li>3. Chris Fehily, " <i>SQL cookbook</i>", CET , 2005.</li> </ol>			
<b>Number of active classes</b>			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:	
<b>Teaching methods</b> Combination of interactive approach with practical problem solving.			
<b>Grading system</b> (maximum 100 points), <b>grading scale</b> from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
<b>Pre-exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
activity during theoretical lectures	10	written exam	30
practical training	20	oral exam	
colloquium(s)/seminar papers	40		
<b>Sum</b>	<b>70</b>	<b>Sum</b>	<b>30</b>