

(Table 5.2) Course unit description

<b>Study program:</b> Informatics				
<b>Type and level of studies:</b> Undergraduate academic studies				
<b>Course unit:</b> Databases 1				
<b>Teacher in charge:</b> Ana Kaplarević-Mališić				
<b>Language of instruction:</b> English				
<b>ECTS:</b> 7				
<b>Prerequisites:</b>				
<b>Semester:</b> Winter				
<b>Course unit objective</b> Course objective is to explain students the basics of databases, i.e. advantages of using database systems over using file systems, how databases and database management systems work, how we manage them; how we design databases, how we query databases.				
<b>Learning outcomes of Course unit</b> Student understand the fundamentals of how data is stored in computer systems. Know the fundamentals of Structured Query Language (SQL) and how it can be used to store and retrieve data from a relational database.				
<b>Course unit contents</b>  <i>Theoretical classes:</i> Introduction to Databases. Examples of usage. Evolution of Database Systems. Databases, database management systems and database systems. DMBS vs. File system. Architecture of DBMS. Data abstraction. Data models. Relational model. Operations in the relational model. Relational algebra. Extended operators of relational algebra. Logical modeling. Functional dependences. Normalization. SQL. Simple queries. Queries involving more than one relation. Subqueries. Aggregation. Modifying data. DDL. Creating, altering and deleting database objects. Stored procedures and functions. Constraints. Active databases - triggers. Views and Indexes. Cursors. Transactions. Basic notions of distributed database systems. <i>Practical classes:</i> SQL. Simple queries. Queries involving more than one relation. Subqueries. Aggregation. Modifying data. DDL. Creating, altering and deleting database objects. Stored procedures and functions. Constraints. Active databases - triggers. Views and Indexes. Cursors. Transactions.				
<b>Literature</b> 1. H. Garcia-Molina, J. D. Ullman, J. D. Widom, <i>Database Systems: The Complete Book</i> , Prentice Hall, 2001 2. J. Ullman, J. Widom, <i>A First Course in Database Systems</i> , Prentice Hall, 2008 3. R. Ramakrishnan, J. Gehrke, <i>Database Management Systems</i> , Third Edition, McGraw-Hill, 2008				
<b>Number of active teaching hours</b>				Other classes:
Lectures: 3	Practice: 3	Other forms of classes:	Independent work:	
<b>Teaching methods</b>				
<b>Examination methods (maximum 100 points)</b>				
<b>Exam prerequisites</b>	<b>No. of points</b>	<b>Final exam</b>	<b>No. of points</b>	
Practical classes/tests	70	Written examination	30	
<b>Grading system</b>				
<b>Grade</b>	<b>No. of points</b>		<b>Description</b>	

10	$\geq 91$	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing
5	$\leq 50$	Failing