

<b>Study program: Information Technology</b>			
<b>Course title: DATABASES</b>			
<b>Teacher(s): Danijela G. Milošević, Marina M. Milošević</b>			
<b>Course status: mandatory</b>			
<b>Number of ECTS credits: 6</b>			
<b>Prerequisite courses: none</b>			
<b>Course objectives</b>			
Acquiring theoretical and applied knowledge in the field of databases, including topics from database theory, as well as practical work on the development and implementation of ORACLE databases. Familiarity with SQL (Structured Query Language) query language and commands for defining database objects, as well as for data manipulation.			
<b>Learning outcomes</b>			
After successful completion of this course, students will have theoretical and practical knowledge necessary to design and implement database projects.			
<b>Content of the course</b>			
<i>Theoretical teaching</i>			
An introduction to databases. Data models. Entities, Relationships, and Attributes. Entity -relationship database model; ER diagrams. Modeling and documenting business rules. Unique identifiers. Functional dependencies. Normalization. Relational model of databases. Relational algebra. Mapping conceptual schemas (ERD) into relational schemas; entity integrity, column integrity and referential integrity. Formal query languages. Physical model of the database. Relational database management systems (RDBMS). Environments for working with databases. SQL query language; DDL statements; DML statements. Single-line and multi-line SQL functions; grouping; sorting; subqueries.			
<i>Practical teaching</i>			
The practical exercises accompany the lectures and introduce students to the conceptual design of databases using practical examples. During the laboratory exercises, students work in the Oracle database environment.			
<b>Literature</b>			
[1] R. Emassri, S. Navathe, Fundamentals of Database Systems, Addison-Wesley, 6th edition, 2010, ISBN: 978-0136086208.			
[2] M. Веиновић и други, Базе података, Универзитет Сингидунум, Београд, 2018, ISBN: 978-8679126849			
[3] C. Coronel, S. Morris, Database Systems: Design, Implementation, & Management 13th Edition, Cengage Learning, 2018, ISBN: 978-1337627900			
[4] Snežana R. Popović, Miloš Milosavljević, SQL programiranje, Računarski fakultet, Beograd, 2020, ISBN: 978-86-7991-432-3			
[5] Joan Casteel, Oracle 12c: SQL 3rd Edition, Cengage Learning, 2015, ISBN 978-1305251038			
[6] D. Wade, Mastering SQL Joins: A Quick Handbook on Mastering SQL Joins with Practical Exercises, Independently, 2023, ISBN: 979-8398196542			
[7] Upom Malik, Matt Goldwasser Benjamin Johnston, SQL za analizu podataka, Kompjuter biblioteka, 2019, ISBN: 9788673105437			
<b>Number of active teaching classes: 5</b>		<b>Theoretical teaching: 2</b>	<b>Practical teaching: 3</b>
<b>Teaching methods</b>			
A combination of classical teaching with the use of an electronic course and specified literature is applied. Homework using the above tools is also required.			
<b>Evaluation of knowledge (maximum number of points 100)</b>			
<b>Pre-exam obligations</b>	<b>Points</b>	<b>Final exam</b>	<b>Points</b>
Activities during teaching process	5	Final exam (written):	/
Practical teaching	15	Final exam (oral):	40
Colloquium	40		