

Basic data of the subject	
<b>University:</b>	University of Applied Sciences in Ferizaj
<b>Academic unit:</b>	Faculty of Engineering and Informatics
<b>Program:</b>	Applied Informatics
<b>Title of the subject:</b>	Database
<b>Level:</b>	Bachelor
<b>Course Status:</b>	Obligatory
<b>Year of studies:</b>	I, Semester II
<b>Number of hours per week:</b>	3
<b>Value of Credits - ECTS:</b>	5
<b>Time / location:</b>	203
<b>Course lecturer:</b>	
<b>Contact details:</b>	<a href="#">_____</a>
<b>Course Description:</b>	
	<p><i>The course provides fundamental knowledge of the theoretical elements of the database (DB), including the principles of database design and programmatic implementation, data normalization, as well as knowledge of database management systems (DBMS) and the SQL language.</i></p> <p><i>Through lectures and independent assignments, students develop skills in relational database design, the use of the SQL language for data manipulation and queries, as well as the implementation of database functions such as triggers and stored procedures.</i></p> <p><i>Along with this, the course includes knowledge of the main classifications of NoSQL databases and data modeling in these systems, analyzing their advantages and disadvantages compared to SQL databases. Through tests and project applications, students apply knowledge gained in security, performance and data usage issues to real applications.</i></p>
<b>Objectives of the course:</b>	
	<p><i>The purpose of this course is to provide students with basic knowledge and practical skills in the field of databases, including the design, development, and management of SQL databases, as well as knowledge of the main categories of NoSQL databases and their applications in the context of contemporary technology. The course aims to prepare students to understand, implement and use databases in IT and application development environments.</i></p>
<b>Expected learning outcomes:</b>	
	<p><i>Upon successful completion of this course, student will be able to:</i></p> <ul style="list-style-type: none"> <li>• <i>Defines basic database concepts, design principles, normalization and DBMS</i></li> <li>• <i>Describes the main parts of database management systems</i></li> <li>• <i>Explains the principles of data modeling</i></li> <li>• <i>Explains and understands SQL syntax and semantics</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>To use the SQL language for data manipulation and requests, as well as to implement various database functions such as triggers and stored procedures.</i></li> <li>• <i>To identify and model data in the main classifications of NoSQL databases, analyzing their advantages and disadvantages compared to SQL databases.</i></li> <li>• <i>Executes functions and procedures in SQL</i></li> </ul>		
<b>Prerequisites:</b>	<i>There are no prerequisites to get started with the Databases. However, it is recommended that students have a basic understanding of mathematics, statistics, and programming.</i>		
<b>Contribution to the student load (which must correspond with learning outcomes)</b>			
<b>Activity</b>	<b>Hour</b>	<b>Day/Week</b>	<b>In total</b>
Lectures with numerical exercises	3	15	45
Internship			
Contacts with teacher / consultations			
Field exercises			
Midterm, seminars and projects.	3	2	6
Homework			
Self-learning time student (at the library or at home)	3	15	45
Final preparation for the exam	7	2	14
Time spent on evaluation (tests, quiz and final exam)			
Projects and presentations.	3	5	15
<b>Total</b>			<b>125</b>
<b>Teaching methodology:</b>	<i>Lectures and exercises combined with case studies and class discussions, as well as active collaboration in student teams</i>		
<b>Assessment methods:</b>	<p><i>The student can choose to be assessed one of the two forms of assessment, given below:</i></p> <ol style="list-style-type: none"> <li><i>1. Form 1: Evaluation with two tests and the Project</i></li> <li><i>2. Form 2: Evaluation of the final exam.</i></li> </ol> <p><b>Form 1:</b>  <i>In the first form of assessment "Assessment with two tests and project" the student is assessed in four activities that are carried out during the lectures:</i></p> <ol style="list-style-type: none"> <li><i>1. Test 1 (30%), individual assessment</i></li> <li><i>2. Test 2 (30%), individual assessment</i></li> <li><i>3. Class activity (10%), individual assessment</i></li> <li><i>4. Project (30%), group assessment.</i></li> </ol> <p><b>Additional clarification:</b>  <i>If the student in each activity above reaches the maximum</i></p>		

*points, then he will be evaluated with 100 points.*

*Students who pass the exam according to Form 1 of the assessment, are released from the obligation to take the final exam. Only if the student is not satisfied with the grade achieved according to form 1, then he can undergo the final exam to obtain a higher grade.*

***Form 2:***

*In the second form of evaluation, "Evaluation with the final exam", the student will undergo the exam which will be held after the end of the course lectures and is organized in the exam deadlines, determined by the University Senate.*

*Through the final exam, the student can achieve a maximum of 70% of the points from the total of 100 points.*

*The rest of the 30% points must be completed through group work on the Project, an activity carried out during the lectures.*

*In Test 1, Test 2, and the final exam, the evaluation of the students will be done through an evaluation form, which must be completed individually by the student. The evaluation form will contain objective and subjective questions through which the student's learning outcomes will be evaluated:*

- The objective questions will be of the following types: (1) Multiple choice questions, (2) True/False, (3) Completion, and (4) Composition/Matching; questions that will be used to assess the student's abilities to recall and recognize the concepts and material of the course.*
- The subjective questions will be of the Essay/written task type that will be used to assess the student's understanding and abilities to apply the knowledge gained in the analysis, synthesis, and evaluation of the problem, from the answers prepared by the student to the question of submitting.*

*Activity in the class means the student's engagement in dealing with the issues discussed in the class, during the lectures*

*Project (30%), group assessment: it is an activity in which students apply the acquired knowledge in a concrete project. It is carried out in groups of 2 or 3 students who are obliged to carry out the activity, document it, and present it to the subject*

	<p>professor.</p> <p>For the form of realism and documentation of the activity, all members of the group will be evaluated with the same point (20%), while the evaluation of the presentation skills of the activity is individual and includes 10%.</p> <p><b>Rating:</b>  91-100 points – graded 10 (ten)  81-90 points – graded 9 (nine)  71-80 points – grade 8 (eight)  61-70 points – grade 7 (seven)  51-60 points – grade 6 (six)  0-50 points – The student repeats the exam.</p>
<b>The ratio of theory and practice:</b>	70% theory with exercises and 30% laboratory work..
<b>Literature</b>	
<b>Basic Literature:</b>	<ol style="list-style-type: none"> <li>1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan (2011.), <i>Database System Concepts</i>, McGraw-Hill</li> <li>2. Ramez Elmasri, Shamkant Navathe, (2014) <i>Fundamentals of Database Systems</i>  Pramod J. Sadalage , Martin Fowler( 2012 ), <i>NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence 1st Edition</i></li> </ol>
<b>Additional Literature:</b>	<ol style="list-style-type: none"> <li>3. Thomas Connolly, Thomas M. Connolly, Carolyn E. Beg (2014.), <i>Database Systems</i>, Addison-Wesley</li> <li>4. Joe Celko (2013)<i>The Complete Guide to NoSQL: What Every SQL Professional Needs to Know about Non-Relational Databases</i></li> </ol>
<b>Designed learning plan</b>	
<b>Week:</b>	<b>Lectures and exercises to be held</b>
<b>Week one:</b>	<i>Introduction to SQL Databases</i>
<b>Week two:</b>	<i>Relational DB Design and Normalization.E-R Diagrams</i>
<b>Week three:</b>	<i>The SQL language. Data Definition Language, Data Manipulation Language</i>
<b>Week four:</b>	<i>Data Query Language, Joins dhe Subqueries,</i>
<b>Week five:</b>	<i>Functions, Triggers dhe Stored Procedures</i>
<b>Week six:</b>	<i>Transaksionet, Views</i>
<b>Week seven:</b>	<i>Test 1</i>
<b>Week eight:</b>	<i>Database Security and Performance</i>
<b>Week nine:</b>	<i>Applications of SQL Databases</i>
<b>Week ten:</b>	<i>Introduction to NoSQL Databases and classification of NoSQL technologies</i>
<b>Week eleven:</b>	<i>The main categories of NoSQL databases: Document-based, Key-value, Column-family, and Graph databases</i>
<b>Week twelve:</b>	<i>Data modeling in NoSQL Databases and changes from SQL databases</i>

<b>Week thirteen:</b>	<i>Advantages and disadvantages of using NoSQL databases</i>
<b>Week fourteen:</b>	<i>Applications of SQL and NoSQL Databases</i>
<b>Week fifteen:</b>	<i>Test 2</i>
<b>Academic policies and rules of conduct</b>	
<i>Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.</i>	