



SYLLABUS PREDMETA

General information

Course title:	DATABASES IN BUSINESS SYSTEMS
ISVU ¹ course code:	225887 / IZ05
Studies in which the course is taught:	Master Study of Business Administration, part time study
Course Instructor:	Ph.D Adam Stančić
Course Assistant:	---
ECTS credits:	4,0
Semester of the course execution:	III. (winter sem.)
Academic year:	2025/2026
Exam prerequisites:	---
Lectures are given in a foreign language:	English
Aims:	Introducing students to the system of management and maintenance of databases and the procedures of their modeling, creation and administration.

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	2	30	attendance 80%
Tutorials:	2	30	attendance 80%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	4	60	

Monitoring of students' work, knowledge evaluation and learning outcomes

Formation of the grade during the implementation of teaching: (Define from minimum 5 to maximum 10 learning outcomes)	LEARNING OUTCOMES (upon completion of the course the student should be able to:)	FACTORS AFFECTING THE GRADE (e.g. term paper, practical work, presentation, ...)	MAXIMUM NUMBER OF POINTS PER FACTOR Presence 10 points Colloquium I 40 points Colloquium II 40 points Seminar 10 points
	I 1: Define conceptual and logical data models	Colloquium I	
	I 2: Describe the elements of a relational data model	Colloquium I	
	I 3: Carry out the formation of the elements of the physical database	Colloquium I	
	I 4: Analyse collected and processed data within the database	Colloquium II	
	I 5: Suggest data exchange procedures between database, applications and users	Colloquium II	
	I 6: Choose a solution for data protection, archiving and migration	Colloquium II	
	I 7: - - -		
	I 8: - - -		
	I 9: - - -		
	I 10: - - -		

¹ ISVU – Information System of Higher Education Institutions in Croatia



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Alternative formation of the grade (I 1 - I 10)	or alternative formation of the grade: I 1 - I 10	TOTAL: 100 points
Students' competencies	<p>The student will be able to independently analyze uncategorized data for the purpose of forming a relational data model and a physical database. Furthermore, by creating queries in query language (SQL), it will search, delete and update data and present it in the form of an application or as a printed report. The student will have knowledge of the exchange of data between the database and users and the procedures for ensuring access rights and data integrity.</p>	

Prerequisites for course approval (lecturer's signature):	Attendance at lectures and exercises - minimum 80%												
Prerequisites for taking exams:	Passed exercises + seminar paper												
Grading scale:	<p>(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5)</p> <table style="margin-left: 20px;"> <tr><td>90-100 - excellent (5)</td><td>(A)</td></tr> <tr><td>80 to 89.9 - very good (4)</td><td>(B)</td></tr> <tr><td>65 to 79.9 - good (3)</td><td>(C)</td></tr> <tr><td>60 to 64.9 - sufficient (2)</td><td>(D)</td></tr> <tr><td>50 to 59.9 - sufficient (2)</td><td>(E)</td></tr> <tr><td>0 to 49.9 - fail (1)</td><td>(F)</td></tr> </table> <p>Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade.</p>	90-100 - excellent (5)	(A)	80 to 89.9 - very good (4)	(B)	65 to 79.9 - good (3)	(C)	60 to 64.9 - sufficient (2)	(D)	50 to 59.9 - sufficient (2)	(E)	0 to 49.9 - fail (1)	(F)
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0 to 49.9 - fail (1)	(F)												

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	Term paper	Composition	Presentation	Continuous assessment and evaluation	Practical work
0,5	0,5				1,0
Independent work	Project	Written exam	Oral exam	Other	
		1,0			

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Introductory lecture, lecture topics, learning outcomes, student obligations	Student responsibilities, databases in practice, examples of using the database (GUI and CLI)
2.	Data, information, data models, database performances, database management systems I	Types of databases (planar, hierarchical, relational, non-relational), examples in practice I
3.	Process models, data flow diagram, data models, EV diagram I	Creating process data flow diagrams, creating entity-link diagrams I
4.	Concept and types of entities, attributes and connections between entities I	Creating entity diagrams, entities (independent, weak), attributes (key, complex, ambiguous, derived), cardinality of relationships (1: 1, 1: N, N: M) I



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5.	Relational data model, relational algebra, keys I 2	Relational scheme, relation, key, attribute, data dictionary, examples of relational algebra I 2
6.	Redundancy, anomalies (entries, updates and deletions) normalization, normal forms I 2	Example of redundancy, functional dependence and implementation of normalization to the third normal form (3NF) I 2
7.	Parts of a physical database, creating a table, working with a table, query language (SQL) I 3	MS Access working environment, creating a table, defining fields and data types, simple queries I 3
8.	Concept of DDL and DML commands, CRUD operations, merging data tables I 3	Overview of basic DDL and DML commands, simpler CRUD examples I 3
9.	Working with the database - tables, indexes, simple queries, display, forms I 4	More advanced CRUD examples, defining indexes, creating simpler forms and reports I 3, I 4
10.	Working with the database - complex queries, triggers, functions, procedures I 4	Working with complex queries I 4
11.	Aggregation, sorting and grouping of data I 4	Examples of aggregation, sorting and grouping of data I 4
12.	Data import and export, data formats (XML, JSON, CSV), unstructured data I 5	Examples of data import and export, example of working with unstructured data I 5
13.	Distributed databases, working in a web environment, working in the cloud, data warehouses I 5	Example of working with a database in a web environment, example of working with a database in the "cloud" I 5
14.	Data archiving and migration, recovery of lost and damaged data I 6	Examples of archiving and data migration, examples of using additional applications for migration and archiving, detection of damaged data I 6
15.	User rights, security and data integrity I 6	Examples of defining user rights in a database, examples of ensuring data integrity I 6

References

REFERENCES (compulsory/additional):

Compulsory:

- Skripta i prezentacije za praćenje predavanja (autor: Adam Stančić)
- Coronel C., Morris S., Rob P.: Database Systems: Design, Implementation, and Management, Course Technology, 10th Edition, Boston, 2013

Additional:

- Vučnović, R.: SQL i relacijski model podataka, Znak, Zagreb, 1995.
- Varga, M: Baze podataka ; Konceptualno, logičko i fizičko modeliranje podataka, Zagreb, 2016

Exams for the academic year: **2025/2026**

Exam dates:	According to the schedule of exams for academic year published on the web-site
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Contact information

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2. Course Instructor/Lecturer:	- - -
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