NAME OF THE COURSE		INTRODUCTION TO DATABASES					
Code	EUBB09		Year of study	3.			
Course teachers	Associate Professor Maja Ćukušić , PhD Assistant professor Tea Mijač, PhD Assistant professor Ivana Ninčević Pašalić, PhD		Credits (ECTS)	5			
Associate teachers	Associate Professor Maja Ćukušić , PhD Assistant professor Tea Mijač, PhD Assistant professor Ivana Ninčević Pašalić, PhD		Type of instructions (number of hours)	L	S	E	F
				26		26	
Status of the course	Elective		Percentage of application of e-learning	30%			

COURSE DESCRIPTION

Course objectives	The main object of the course is to ensure the acquisition of skills and abilities to design and implement the relational database in everyday practice. Students will master the fundamental concepts and methods for modeling a part of the observed complex real system, converting that model to a concrete database model, and gaining the ability to turn the designed database into a concrete meaningful implementation on the computer.
Course enrolment requirements and entry competences required for the course	There are no prerequisites for enrollment.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Learning outcome of the course: Analysis and application of database modeling methods for creating conceptual and logical models, as well as the assessment of the justification and advantages of using databases compared to alternative data storage methods. Individual learning outcomes: 1. Identify the situation, based on the need and observation of the real system, where it is advisable to use the database. 2. To model and adequately record general knowledge of the part of the observed real system by classifying data on this real system: data types, their attributes, and relationships between the observed types of data. 3. Apply the methodology for converting the general data model to the chosen relational database model 4. Independently, based on created model, implement a database on a computer, including creating a simple user interface for data entry, search, data processing, and reporting. 5. Independently search the literature, track and adopt the latest achievements in the field of modeling and implementation of databases.

Course content broken down in detail by weekly class schedule (syllabus)				
	Lectures		**Exercises**	
	Topic	**Hours**	**Topic**	**Hours**
	Introduction to databases. Relation and non-relation databases.	2	Introduction to data modelling entity and relationship.	2

	Relational database model. Modelling. Conceptual design of database by applying ER model.	2	**Assignment.** Modelling simple ER models.	2
	Relationships and sets of relationships. Functionality of relationships.	2	**Assignment.** Modelling complex ER models.	2
	Converting ER model to relational model.	2	**Assignment.** Creating ER diagrams.	2
	Process of database normalization and normal forms.	2	**Assignment.** Converting ER model to relational model.	2
	Operations of the relational model. Relational algebra.	2	**Assignment.** Normalization (1NF, 2NF, 3NF, BCNF)	2
	SQL (Structured Query Language)	2	**Assignment.** Getting to know the software interface. Basics of MS Access. Creating a database.	2
	Test I.			
	Defining a database using SQL (DDL). Simple queries. Conditional expression.	2	**Assignment.** Filling the database using the import option in MS Access. Simple SQL queries.	2
	Changing and deleting a table. Indexes and foreign keys.	2	**Assignment.** Creating complex SQL queries in MS Access.	2
	Formatting the outcome results. Queries over multiple relations. Query to create a new table.	2	**Assignment.** Forms for data input in MS Access.	2
	SQL queries for data update. Aggregate functions. Group inquiries. Macro queries. SQL query optimization.	2	**Assignment.** Views and reports in MS Access. Data export in MS Access.	2
	Using Databases for Decision-Making: Methods and Tools	2	**Assignment.** Using SQL queries for data analytics.	2
	Predictive analytics.	2	**Assignment.** Creating Interactive Reports and Dashboards in a Specialized Visualization and Analytics Tool.	2
	Test II.			

Format of instruction	☑ lecturers ☑ seminars and workshops ☑ exercises ☐ *on line* entirely ☐ partial e-learning ☐ filed work	☑ individual/independent assignments ☐ multimedia ☑ laboratory ☐ work with the mentor ☐ ………….(other)
Student responsibilities	The student is obliged to attend and to follow the classes regularly, to perform given assignments, and to actively participate in all forms of teaching. To attain a signature, a regular student must attend at least 50% of classes. In addition to the attendance, students need to submit all assignments. The condition for accessing the exam is the signature.	

Screening student work *(name the proportion of ECTS credits for each*	Class attendance	1,7 ECTS	Research		Practical training	
	Experimental work		Report		Final assignment	1,3 ECTS

activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Essay		Seminar essay		(Other)	
	Tests	2 ECTS*	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester, two tests are conducted. Prerequisite for attending the second test is positively graded first test. Students who successfully passed both tests are exempted from the exam in the regular exam period. Tests are deemed to be passed if the average rating is 60% or more. The final assignment is prerequisite for attending the exam. The final grade is formed as a sum of average grades obtained through written tests. If a student does not have enough points from tests during the semester, he or she is required to take the written exam. The grade will be determined as follows: 0-59 insufficient (1) 60-69 sufficient (2) 70-79 good (3) 80-89 very good (4) 90-100 excellent (5)

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Authorized lectures and teaching materials on Moodle's course pages (2023).	0	Moodle
	Silberschatz, A., Korth, H. F., & Sudarshan, S. (2020). Database System Concepts (7th Edition). McGraw-Hill.		
	Relational Databases and Microsoft Access 365 - Version 4.0, University of Winnipeg		Moodle (PDF)

Optional literature	• Coronel, C (2018) Database Systems Design, Implementation, & Management, 13th Edition, Cengage Learning • Jonathan Eckstein, Bonnie R. Schultz (2018) Introductory Relational Database Design for Business, with Microsoft Access-Wiley (2018)
Quality assurance methods that ensure the acquisition of exit competences	• Monitoring attendance and performance of other student obligations (teacher) • Teaching Supervision (Vice dean for Teaching) • Analysis of the success of studies in all subject studies (Vice dean for Teaching) • Student Survey on the Quality of Teachers and Teaching for Each Subject Study (UNIST, Center for Quality Improvement) • The exam conducted by the subject teacher examines all learning outcomes of the subject. Periodic examination of the content of the exam is conducted on the basis of which the appropriateness of the method of checking the learning outcomes (Vice dean for Teaching)
Other (as the proposer wishes to add)	-