

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Control Systems		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Introduction to Databases		
Lecturer (for lectures)		Bogdanović D. Miloš, Stanimirović S. Aleksandar		
Lecturer/associate (for exercises)		Stanimirović S. Aleksandar, Antolović D. Igor		
Lecturer/associate (for OFE)		Veljković Ž. Nataša, Frtunić-Gligorijević B. Milena		
Number of ECTS		6	Course status (obligatory/elective)	Elective
Prerequisites				
Introduction to terminology, data models, the design process and the usage of databases. Learning theoretical knowledge regarding the relational model. Acquiring practical knowledge regarding entity-relation model, implementation of relational databases and learning SQL language.				
Course objectives				
Theoretical and practical knowledge regarding database design and ER model. Theoretical and practical knowledge of the relational data model and the implementation of databases. Practical knowledge regarding SQL language, as well as implementation, storage and querying data in relational databases.				
Course outcomes				
Theoretical and practical knowledge regarding database design and ER model. Theoretical and practical knowledge of the relational data model and the implementation of databases. Practical knowledge regarding SQL language, as well as implementation, storage and querying data in relational databases.				
Course outline				
<ol style="list-style-type: none"> 1. Introduction to databases: basic terms (data, information, database, database management system, database system, database application), conventional data processing and database processing, categorization of database users, benefits and disadvantages, history of development. 2. Data models: DBMS abstraction levels, three-schema architecture, the concept of data models and its components. The process of database design. 3. Conceptual design of the database, ER model - ER data model, ER concepts, graphical notation (ER diagram), database design using ER model, examples of database design based on requirements. 4. Relational model: relational model concepts, structural and integral component, relation schemas, instances, relation keys, constraint specification, defining constraints using SQL DDL commands. Translating conceptual model to relational model. 				
Theoretical teaching				
<ol style="list-style-type: none"> 1. ER diagrams (entities, relationships, attributes), tutorials for database design process, design based on requirements specification - examples. 2. Translating ER model into a relational model, examples 3. SQL DDL commands (CREATE TABLE command, data types), create tables for a previously designed database 4. Queries and SQL SELECT command (basic command structure, table joins, advanced command structure) 5. SQL commands for modifying data (INSERT, UPDATE, DELETE) <p>Homework: designing a database based on the specified requirements using the ER model</p>				
Practical teaching (exercises, OFE, study and research work)				
<ol style="list-style-type: none"> 1. ER diagrams (entities, relationships, attributes), tutorials for database design process, design based on requirements specification - examples. 2. Translating ER model into a relational model, examples 3. SQL DDL commands (CREATE TABLE command, data types), create tables for a previously designed database 4. Queries and SQL SELECT command (basic command structure, table joins, advanced command structure) 5. SQL commands for modifying data (INSERT, UPDATE, DELETE) <p>Homework: designing a database based on the specified requirements using the ER model</p>				
Textbooks/references				
1	R. Emassri, S. Navathe, Fundamentals of Database Systems, Addison-Wesley; 6 edition (2010), ISBN-10: 0136086209, ISBN-13: 978-0136086208			
2	L. Stoimenov, Introduction to Databases (in Serbian), University of Niš, Faculty of Electronic Engineering, 2013/2014, ISBN (e-print) 978-86-6125-099-6, ISBN (Print): 978-86-6125-111-5			
3				
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	1	0	0
Teaching methods				
Lectures, auditory exercises, laboratory exercises, students' independent homework assignments and projects				
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	
Activity during lectures			Written exam	
Exercises		20	Oral exam	
Colloquia				
Projects				