

Course title:	Databases
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Course code	Course status	Semester	Number of ECTS credits	Lecture hours
132003135	Mandatory	III	6	3+0+2

Study program: Basic applied studies, ELECTRICAL ENGINEERING, study program: Computer engineering (studies last for 6 semesters, 180 ECTS credits).	
Prerequisites: No prerequisites required.	
Course aims: In this course, students are introduced to general concepts of data modelling, object-relational data model, relational data model (classical and extended), database logical projecting and database management systems. Exercises cover SQL relational query language.	
Teacher(s) and assistant(s): Ph.D. Jaroslav E. Poliščuk - teacher Ph. D. Neđeljko Lekić - assistant Dipl. Ing. Predrag Raković - assistant	
Teaching method: Lectures, exercises in a computer classroom, studying and doing home exercises. Consultations.	
Course synopsis:	
Preliminary weeks I week II week III week IV week V week VI week VII week VIII week IX week X week XI week XII week XIII week XIV week XV week XVI week Final week XVIII-XXI week	Preparation and semester enrolment. IS development in general. Database management systems (DBMS), architecture and example of DBMS. Data modelling in general: classification, structure, limitations and model operators. Functional dependences. Object-relational data model (ORDM): structure and concepts of ORDM. ORDM concepts graphical representation, limitations and object-relational diagram (ORD) making rules. Limitations and ORDM operators. ORDM to relational model transforming: Chen's method. ORDM example. First test Free week Classical relational data model (RDM): structure and concepts of RDM, relational database, relational scheme. RDM limitations and operators, relational algebra. Extended relational data model: extended RDM concepts and modelling. Entity types in extended RDM, generalization and aggregation, data dictionary. Database logical projecting: database canonical projecting by normalization. Second test First, second and third normalized form. Database canonical model projecting by unnormalized relations analysis. Data model represented by input and output files set, ORDM as input model. Final exam Administrative procedures. Additional lessons, correction of the final exam and administrative procedures.
STUDENT WORKLOAD	
<u>per week</u>	<u>per semester</u>
Working hours: 6 credits x 40/30 = 8 hours. Working hours structure: 3 hours for teaching 2 hours for exercises 3 hours for individual work, including consultations.	Teaching and the final exam: (8 hours) x 16 = 128 hours. Necessary preparation (before semester): 2 x (8 hours) = 16 hours. Total work hours for the course: 6 x 30 hours = 180 hours Additional hours for preparing correction of the final exam, including the exam taking: up to 36 hours. Work hours structure: 128 hours (lectures) + 16 hours (preparation) + 36 hours (additional work)
Lessons attendance is mandatory for students, as well as doing exercises, home exercises and both tests. The first test covers database theory, while the second covers SQL relational query language.	
Literature: Poliščuk E. J.: Baze podataka (monograph), JEP, Podgorica, 2003.	
The forms of knowledge testing and grading:	
<ul style="list-style-type: none"> - Four home exercises carry at most 10 points (up to 2.5 points each) - Each test carries 20 points (40 points total) - Final exam carries 50 points. Student gets the passing grade by collecting 51 points at least.	
Special remarks for the course: Exercises cover work with databases by using SQL relational query language from modern DBMS, including: relations and virtual relations creating, database searching, database management and report creating.	
Teacher(s) who provided the information: Ph.D. Jaroslav E. Poliščuk	
Remark: Teacher provides additional information regarding the course (323 office).	