RTU Course "Database Management Systems"

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General data

Code	DSP201
Course title	Database Management Systems
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Academic
Field of study	Computer Science
Responsible instructor	Jānis Eiduks
Academic staff	Viktorija Vinogradova Andrejs Grigorjevs Ainārs Auziņš Pēteris Rudzājs Oļegs Verhodubs
Volume of the course: parts and credits points	1 part, 4.0 Credit Points, 6.0 ECTS credits
Language of instruction	LV, EN
Annotation	Concepts of database (DB) technology. DB management systems (DBMS) and their functionality. DBMS types. Possibilities and restrictions of relation DB. DB data definition languages. Query languages SQL and QbE. Application design in DB systems. Tools of programming automatization. DBMS programming languages. Data exchange standards. Main principles of DB design.
Goals and objectives of the course in terms of competences and skills	Students are able to design and implement a relational data base. Students are able to retrieve data from relational data base using SQL. Students are able to implement data base application using data access technologies.
Structure and tasks of independent studies	5 individual tasks
Recommended literature	1. Database In Depth. Relational Theory for Practitioners/C. J. Date. 2005, O`Reilly Media, 208 pp. 2. SQL unleashed / Sakhr Youness, Pierre Boutquin, Umachandar Jayachardran et al. 2nd ed. Indianapolis (Ind.) : Sams, 2000. 3. SQL : полное руководство / Джеймс Р. Грофф, Пол Н. Вайнберг ; пер. с англ. В.В. Новикова ; под ред. В.Р. Гинзбурга. Киев : BHV, 2000.
Course prerequisites	Discrete Structures of Computer Science

Course outline

Theme	Hours
History of the data bases. Data bases types. Relational data bases	2
Relational data base design. Data normalisation	6
Data base objects. Data types. Data and relational integrity	4
Data input into the data base	2
SQL standard. SQL dialects. DDL and DML. DDL commands	4
Select, From and Where clauses. Table joins. Predicates. Data order	6
Group By and Having clauses. SQL functions and operators	4
Subselect. Union. Crosstables	4
MS Access application objects: forms and reports	2
Reporting tools and options	6
Event procedures and macros	4
Recordset and cursors. ADO DB object model and methods	4
DB dictionary. ADO X object model	4
Data warehouse and data mart. Analytical queries	6
DB users and permissions	2
Other data base types: XML data bases	4

Learning outcomes and assessment

Learning outcomes	Assessment methods
Students are able to design and implement a relational data base. Students are able to define the data base constraints	Task „Data base implementation” / Exam
Students are able to retrieve data from the relational data base using SQL.	Task „Data retrieval” / Exam
Students are familiar with reporting tools and are able to design report according to the user needs	Task „Data base reporting” / Exam

Students are able to implement the data base application using data access technologies and automatic tools.	Task „Data base application” / Exam
Students are able to implement the data warehouse for the existing data base	Task „Data warehouse” / Exam

Study subject structure

Part	CP	Hours per Week			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	4.0	2.0	0.0	2.0		*	