Subject code	Credits
INF1010	4

Title

DUOMENŲ BAZŲS IR INFORMACINŲS SISTEMOS

Title in English

DATABASES AND INFORMATION SYSTEMS

Subject goal and annotation

Course examines general concepts and requirements of database systems (DBS), levels of data representation, stages of design, conceptual modelling, classical data models, relational model, fundamentals of relational algebra, relational normal forms, fundamentals of SQL query language and its application in databases. The course examines fundamentals of information systems, their classification, models, IS life cycle, principles of IS planning and development, IS design methods.

Prerequisites

Undergraduate courses: Fundamental of Computer Programming and information technology

Relationship between the learning outcomes of the Programme and learning outcomes of the subject

Learning outcomes of the Programme	Learning outcomes of the subject	Criteria for measuring the achievement of learning outcomes
3. Knowledge of basic and advanced computer science and its application. 7. Formalization and specification of real-world problems, and ability to describe them at an abstract level 8. Perform interdisciplinary research and development in Internet systems area, apply results in practical applications. 10. Analysis, design and development of advanced Internet systems. 12. Analysis, design and development of diverse software systems.	To identify the different levels of data representation and models of data organization.	can distinguish between data representation levels and models of data organization
	To create a conceptual database model.	designs high quality conceptual database model, by selecting particular notation of its formation
	To apply normal forms and relational calculus in creation of relational models of databases.	performs a normalisation of databases relational model by applying normal forms correctly
	To perform queries and modify relational data models, using SQL query language.	knows and correctly performs a given amount of certain difficulty level queries by using SQL query language
	To apply systems analysis methods to determine of the organization's (institutions) information needs.	selects organization and describes the needs of organization's consumers according to the requirements for the information system
	To carry out the functional modeling of the information system (IS).	identifies and illustrates Information System functions and users of and divides them in to the the levels according to IS functionality
	Apply various design methods of information systems development.	argumentative choice of the design methods and software for the IS development

Subject content

	Lecture topics and contents	Hours
1.	Basic concepts of database systems. Requirements for database systems.	3
2.	Levels of data representation. Design Stages.	2

3.	Conceptual models. Main principles of Entity Relation diagram design.	3
4.	Classical Models of Data Organization. Relational data model.	3
5.	Fundamentals of Relational Algebra. Relational calculus.	2
6.	Database normalization.Database normalization concept; relational normal forms, theoretical and practical importance.	2
7.	Data Retrieval Methods and Application in Database Systems.	2
8.	Fundamentals of SQL query language and its application in databases.	3
9.	Data integrity requirements and their implementation using SQL.	2
10.	Classification and Structure of Information Systems.	2
11.	An analysis of information requirements of the organization.Analysis of organizational Process.	3
12.	Principlesof InformationSystems Development. Life Cycle of the Information Systems. Design Methods of IS.	3
	Total	**30**

Practical work contents

Creating normal forms for relational database and developing logical and physical structure, query formation using structured query language SQL. An analysis of information requirements of the particular organization or business area using structured analysis method and creation of IS sketch model. Information system design and realization in team.

Evaluation of study results

Final written exam (50%), mid-term written exam (17%), and assessments of laboratory (practical) work (33%).

Distribution of subject study hours

Lectures	30
Laboratory work in computer class	30
Individual studies (including studies in groups, preparation for the mid-term and final exams)	60
Total	**120**

Recommended literature

No	Authors of publication and title	Number of copies available		
		in the Library of VMU	*in specialized publication collections at VMU*	*in other libraries*
Basic materials				
1.	Sekluckis V., Gudas S., Garzva G. Informacijos sistemos ir duomen baz s. Informacijos sistemos ir duomen baz s. Kaunas. Technologija. 2008	100		
2.	Baronas R. Duomen bazi valdymo sistemos. VilniusTEV. 2005	3	5	
Supplementarymaterials				
1.	Paradauskas B., Nemurait L. Duomen baz s ir semantiniai modeliai. Kaunas.Technologija. 2008.		15	
2.	S. Gudas. Organizacijos informacini poreiki analiz . Kaunas. Technologija. 2002		2	
3.	Ian Gilfillan. MySQL 4 vadovas. Kaunas. 2003		2	
4.	E. Turban, D.Leidner, E.Mclean, J. Wetherbe. Information Technology for management. Copyright John Wiley. 2006		1	

Subject prepared and coordinated by

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