

COURSE UNIT DESCRIPTION

Course unit title	Course unit code
INFORMATION SYSTEMS AND DATABASES	

Lecturer (s)	Department where course unit is delivered
Assoc. prof. dr. Ilona Veitaitė	Kaunas Faculty Institute of Social Sciences and Applied Informatics

Cycle	Level of course unit	Type of the course unit
First	1	Compulsory

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Auditorium	2 semester	English

Prerequisites and corequisites	
Prerequisites: Computer Architecture/Analysis and Specification of IS Requirements	Corequisites:

Number of ECTS credits allocated	Student's workload	Contact work hours	Individual work hours
5	130	52	78

Purpose of the course unit: programme competences to be developed		
Development of the ability to understand, analyze, model and explain: information systems (IS) and their main part - databases (DB) (structure, properties, practical methods of development); to design a DB and implement the designed application projects.		
Learning outcomes of course unit	Teaching and learning methods	Assessment methods
Will know about the structure and classification of modern IS, data organization models, features of the relational data model, data normalization principles and conceptual modeling methods, and the composition of a logical DB structure model. Will be able to assess the possibilities of modern database management systems (DBMS), based on the requirements of DB information and its properties, model driven methods, DBMS composition and basic tools. Will be able to adapt relational DB design methods conceptually and logically. Will be able to create the necessary DB and implement the planned program projects in DBMS.	Lectures, practice, individual work.	Practical works, exam.

Course content: breakdown of the topics	Contact work hours							Individual work hours and tasks	
	Lectures	Consultations	Seminars	Practice classes	Laboratory	Practice	All contact work	Individual work	Tasks
Introductory. Description of the organisation.	2				4		6	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Information Systems. Business Management Systems.	2				4		6	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Information Systems Lifecycles. Introduction to databases.	2				4		8	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Databases, DB management systems, information retrieval, database design, semantic modelling.	2				4		6	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Functions hierarchy. Entity relationship diagram. Specification of user requirements. Model-driven architecture (MDA). UML modelling.	2				6		8	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Databases. Normalization. Database creation and data insert; Virtual tables and data independence levels; Ensuring data integrity.	2				4		6	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Information Systems Testing. Information technology and business alignment.	2				4		6	8	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Exam	2	2	2				4	22	
Total	16	2	2		32		52	78	

Assessment strategy	Comparative weight percentage	Date of examination	Assessment criteria
Practical Work I	20%	4-5 week	The quality and completeness of the description of the activities of the computerized organization is evaluated (the description is compiled for a specific subject area, the topic chosen by the student). Graphical representation of operational

			processes (DFD notation) is evaluated. Assessment on the 10-point scale according to the assessment criteria of the VU.
Practical Work II	20%	9-10 week	The part of the IS requirements specification, changes of the first practical work, graphical representation of the organization's processes in UML notation, are evaluated. Assessment on the 10-point scale according to the assessment criteria of the VU.
Practical Work III	20%	15-16 week	The final assessment depends on the compliance of the performed tasks with the requirements, the quality of the performance, the presentation, defense, and the students' knowledge and practical skills. Assessment on the 10-point scale according to the assessment criteria of the VU.
Exam	40%	Exam Session	The exam covers the whole theoretical and practical material. The assessment on the 10-point scale according to the assessment criteria of the VU.
Exam grade must be ≥ 5			
Final Grade = $PWI*0,2+PWII*0,2+PWIII*0,2+E*0,4$			
Final Grade (as an external student) = $PW*0,5+E*0,5$			

Author	Year	Title	Number of periodical publication or publication Volume	The place of publication and publisher or online link
Required reading				
Darwen H.	2012	An introduction to relational database theory		https://dvikan.no/ntnu-studentserver/kompendier/an-introduction-to-relational-database-theory.pdf
Watt, A., Eng, N.	2021	Database Design - 2nd Edition		http://solr.bccampus.ca:8001/bcc/file/5b6f010a-0563-44d4-94c5-67caa515d2c5/1/Database-Design-2nd-Edition-1549306327._print.pdf
Recommended reading				
Bagui, S., Earp, R.	2012	Database Design using Entity relationship Diagrams.		http://kingcall.oss-cn-hangzhou.aliyuncs.com/blog/pdf/Database%20Design%20Using%20Entity-Relationship%20Diagrams%20Second%20Edition67191606114731229.pdf