

FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION

Study course:	Data Base Technologies				
Study programme:	Information Technologies				
Level of Study programme:	<input checked="" type="checkbox"/> First level professional higher education <input checked="" type="checkbox"/> Professional Bachelor				
Type of Study programme:	<input checked="" type="checkbox"/> Compulsory course (Part A)				
Course workload:	Credits	ECTS	Academic hours	Contact hours	Independent work hours
	4	6	160	64	96
Course Author/ Tutor:	Raivo Bāliņš				
	Guest lecturer, Mg. Sc. raivo.balins@va.lv				
	Consultations: according to the schedule for each semester				
Study Form:	Full time				
Study year, semester:	1 st study year, 1 st semester				
Study language:	English, Latvian				
Course summary:	The aim of the study course is to acquaint students with the basic principles of database operation, to provide practical skills in creating and using DB using DBMS PostgreSQL and MySQL.				
Description of the organization and tasks of students' independent work:	Lectures, practical classes, tests, independent work, final test.				
Assesment:	Exam				
Requirements for Credits:	Attendance of lectures and practical work. Timely completion of independent work. Positive evaluation in tests. The final mark in the study course consists of: 1. Evaluation of independent work - 25% 2. Assessment in tests - 25% 3. Assessment in the exam - 50%				
Academic Ethics	Students must observe academic and research ethics, Vidzeme University of Applied Sciences ethics regulations, including: <input type="checkbox"/> study papers must be developed independently; <input type="checkbox"/> study papers must contain references to all used statements, ideas and data of other authors; <input type="checkbox"/> data collection must use appropriate data collection methods, research ethics must be respected, empirical data must be collected independently and must not be distorted or falsified; <input type="checkbox"/> the student must take the examination independently, without the use of auxiliary materials and consultations with other students, unless the lecturer has determined otherwise. In case of non-observance of academic and research ethics, a penalty is applied in accordance with the ViA Code of Ethics and the study course must be re-acquired, unless the penalty is ex-matriculation.				
Learning Outcomes; the evaluation methods and criteri	Learning Outcomes			Evaluation methods and criteria	
	Knowledge				
	Knowledge of basic database concepts, architecture, database design, file structures, transactions, DB security and auditing.			Lectures, practical work, tests, individual work, exam	
	Skills				
Creation, maintainance of DB.			Practical work, individual work		
Creation of complex requests			Practical work, exam		

	Creating of saved procedures and triggers.	Practical work, individual work, exam
	Clarification of security requirements.	Practical work, individual work
	Access rights management, audit.	Practical work, individual work
	Competencies	
	Intellectual competency	Practical work, individual work
	Professional and academic competencies	Practical work, exam
	Practical competencies	Practical work, individual work
Course compulsory literature:	<ol style="list-style-type: none"> 1. R. Ramakrishnan. Database Management Systems (3rd ed.) McGraw-Hill Higher Education 2007.g. 1104.lpp 2. R.Elmasari, S. Navathe Fundamentals of Databse Systems (7th ed.)Addison-Wesley Pub.Comp. 2016.g. 955 lpp 3. J.A.Hoffer, M.B. Prescott, F.R. Mcfadden Modern Database Management (12th ed.) Prentice Hall 2016.g. 638 lpp 	
Course additional literature:	<ol style="list-style-type: none"> 1. MySQL Reference Manual 2. PostgreSQL Reference Manual 	

Study Course plan:

Topic	Academic hours		Study Form/ Organization of independent work of students and task description
	Contact hours	Hours of independent work	
Definitions. Database systems, its architecture and classification. Database management systems, its architecture and division. The most widely used modern DBMS.	4	6	Lecture, Practical work
DB creation, table creation, data types.	4	6	Lecture, Practical work
DB system development and DB design. DB creation stages. Transforming ER diagrams into relations. Normal forms and normalization. Setting domain restrictions.	4	6	Lecture, Practical work
Adding data to the DB. Creating simple queries using SQL.	4	6	Lecture, Practical work
SELECT extended options.	4	6	Lecture, Practical work
SELECT subqueries.	4	6	Lecture, Practical work
File structure and record storage. RAID. Network storage. DB organization models. File organization. Index. Data integrity.	4	6	Lecture, Practical work
Preparing for the test. Test on 1st - 7th lesson topics.	4	6	Test
Creation of complex requests. Stored procedures.	4	6	Lecture, Practical work
PL / pgSQL constructions, control structures and operators. Triggers.	4	6	Lecture, Practical work
Transactions, their properties and states Transactions in SQL. Concurrency control methods. Blocking levels and methods.	4	6	Lecture, Practical work
DB security, goals. Clarification of security requirements. Security mechanisms. Access rights management. Audits.	4	6	Lecture, Practical work
Object DB. Data storage.	4	6	Lecture, Practical work
Preparation for the test. Test on 9th - 13th lesson topics.	4	6	Test
Presentations of practical works.	4	6	Presentations
Exam. Theoretical part, practical part	4	6	Exam
<i>Stundu skaits kopā:</i>	64	96	