VIDZEMES AUGSTSKOLA

FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION

Course Title:	**The integration principles of database systems (basics)**					
Course code (LAIS):						
Study programme:						
Level of Study programme:	☐	1st level professional higher education				
	☒	Professional Bachelor				
	☐	Professional Master				
	☐	Academic Master				
	☐	PhD level				
Type of Study programme:	☐	Compulsory course (Part A)				
	☒	Professional specialization courses (Part B, compulsory)				
	☐	Professional specialization optional courses (Part B, optional)				
	☐	Elective courses (Part C)				
Course Workload:	**Credits**	**ECTS**	**Academic hours**	**Contact hours**	**Independent work hours**	
	4	6	160	64	96	
Course Author/ Tutor:	**Andris Lapans**					
	Visiting research assistant, Mg.					
	e-mail: andris.lapans@va.lv					
	Consultation: according to the schedule for each semester					
Study Form:	Full time studies					
Study year, semester:	2020/2021					
Language:	English					
Prerequisites for the Course:	Database technologies					
Course Summary:	The aim of the study course is to introduce students with the diversity of database systems and applicability of them. The most popular database management systems, data extraction, transformation, and loading will be covered. Improvement of practical skills will be realized using Oracle software and tools. During the lectures and practical classes, the students will be provided with information about the course topic materials and work environment. The main instructions for arranging the work environment will be given. The coursework is coordinated and started, which is individual for everyone. The task of students is to master the course materials, to implement the coursework in their own environment, and create the final online product during independent working hours.					
Assessment:	Exam					
Requirements for Credits:	Attendance of lectures and practical work. Successful implementation of independent coursework. The final evaluation mark in the study course consists of: - Evaluation of activity in the classroom and coursework (60%); - Exam mark (40%)					
Abiding by the Academic Ethics	Students must abide by the academic and research ethics, Vidzeme University of Applied Sciences Ethics Regulations, incl.: – study papers must be independently developed; – the study work should reference all statements, ideas and data used that have been authored by someone else; – appropriate data acquisition methods should be used in the acquisition of data, the research ethics must be respected, empirical data must be collected independently and cannot be distorted or falsified; – the examination must be carried out by the student independently, without the use of supporting materials and/or consultations with other students, unless the lecturer states otherwise. In the event of non-compliance with the academic and research ethics, punishment is imposed in accordance with the ViA Ethics Regulations and the study course must be re-taken, unless the punishment is extramarital.					
Learning Outcomes; the	**Learning Outcomes**			**The evaluation methods and criteria**		

evaluation methods and criteria	**Knowledge**	
	Data diversity, openness of database systems, storage and security, maintenance and publication of information. Data exchange capabilities between different systems, transformations.	Level of activity in the classroom, independent work, quality of the coursework, exam.
	Basic knowledge about one of the most popular database management systems – Oracle and development tools.	Questionnaire.
	Data manipulation language (DML) and data definition language (DDL).	Tests.
	Skills	
	Search and use of literature and other teaching resources.	Formative assessment. Time spent on the task, learning speed.
	Mastering the full system implementation cycle, starting with the arrangement of the work environment and ending with a workable system.	Practical classes and independent work.
	Requirements and systems analysis.	Individual, unsupervised work.
	Competency	
	Ability to navigate in a very large field of available information, ability to find what is needed.	Efficiency of the work results.
	IT competence.	Independency and sustainability.
	Professional and academic abilities.	Way of presentation, confidence .
Course Compulsory literature:	1. Andrew J. Oppel. Databases: A Beginner's Guide. 2009. 497 pg. 2. Ralph Kimball, Joe Caserta. The Data Warehouse ETL Toolkit. 2004. 526 pg. 3. Andy Oppel, Robert Sheldon. SQL: A Beginner's Guide. 2009. 553 pg. 4.	
Course additional literature:	1. Talend Open Studio for Data Integration. Getting Started Guide. 2016. 46 pg.	
Course confirmation date:		
Date of course description update:		

Study Course Plan:

Date	Theme	Academic hours		Study Form/ Organization of independent work of students and task description
		Contact hours	**Independent work hours**	
The date is specified before the implementation of the course				
	Repetition of the course "Database	**4**	**8**	Lecture, short questionnaire

	Technologies", analysis of the existing knowledge about databases. Comparison of some most popular database management systems, introduction to the Oracle – working environment of the course.			about existing knowledge, practical work in the classroom, independent work (repetition of the previous course for those who are not meet the requirements.
	Identification of resources, installation of base software, development tools and creating own work environment.	**2**	**4**	The lecture gives instructions on what resources should be used, in the practical classes the arrangement of the work environment is started. Independently fully equips the work environment, performs functionality and performance tests
	Oracle DBMS and Application Express basics	**6**	**10**	Lecture, practical work. System use and administration. Working with data.
	Test data set, use of documentation, tutorials, case studies. Open data sources.	**8**	**12**	Practical work in the class, independent work. Search free and open data sources, examine them, import and use.
	SQL, PL / SQL and JavaScript	**8**	**8**	Data selection, input, modification, deletion and publication cycle. System prototype development.
	Full workflow to create simple data insert, maintenance and publication system	**12**	**12**	Practical work in the class, independent work. Use of preinstalled samples as learning sources, customize and adapt them.
	ETL basics, Talend Studio basics	**6**	**8**	Data integration tasks and tools.
	Install Postgres database and Talend studio in the own environment. Configure connectivity, learn basics from samples and documentation.	**2**	**6**	Practical work in the class, independent work. Read related books and online documents, check availability of other ETL tools, learn samples.
	Create REST data service in the remote Oracle APEX, publish sample data. Create automated workflow in the Talend studio which get data from the REST service, transforms them into another form, loads to the Postgres database.	**6**	**6**	Practical work in the class, independent work. Connect two completely different data sources and create automated data exchange scenario between them.
	Implement system, document all in the coursework paper, create installation scripts.	**2**	**12**	Independent work. Scripts should be prepared and delivered in the form, then anybody else can take them

				and install in own system, testing and validation should be done.
	Presentation of the coursework, live demo, delivery of the installation scripts and coursework document (electronic form) which is results of independent work and accumulated all lessons learn.	**4**	**4**	Summarizes all the results of independent work, develops a course presentation, each student presents his / her performance to everyone else.
	Exam. Theoretical, speaking answer according to a ticket pulled out.	**4**	**6**	Review exam topics, theoretically present their knowledge of the "pulled out".
	Hours total:	***64***	***96***	

Study Course Plan (part time):

Date	Theme	Academic hours		Study Form/ Organization of independent work of students and task description
		Contact hours	**Independent work hours**	
The date is specified before the implementation of the course				
	Repetition of the course "Database Technologies", analysis of the existing knowledge about databases. Comparison of some most popular database management systems, introduction to the Oracle – working environment of the course.	**0**	**8**	Lecture, short questionnaire about existing knowledge, practical work in the classroom, independent work (repetition of the previous course for those who are not meet the requirements.
	Identification of resources, installation of base software, development tools and creating own work environment.	**2**	**4**	The lecture gives instructions on what resources should be used, in the practical classes the arrangement of the work environment is started. Independently fully equips the work environment, performs functionality and performance tests
	Oracle DBMS and Application Express basics	**2**	**10**	Lecture, practical work. System use and administration. Working with data.
	Test data set, use of documentation, tutorials, case studies. Open data sources.	**2**	**20**	Practical work in the class, independent work. Search free and open data sources, examine them, import and use.
	SQL, PL / SQL and JavaScript	**0**	**12**	Data selection, input,

				modification, deletion and publication cycle. System prototype development.
	Full workflow to create simple data insert, maintenance and publication system	**4**	**26**	Practical work in the class, independent work. Use of preinstalled samples as learning sources, customize and adapt them.
	ETL basics, Talend Studio basics	**2**	**8**	Data integration tasks and tools.
	Install Postgres database and Talend studio in the own environment. Configure connectivity, learn basics from samples and documentation.	**0**	**6**	Practical work in the class, independent work. Read related books and online documents, check availability of other ETL tools, learn samples.
	Create REST data service in the remote Oracle APEX, publish sample data. Create automated workflow in the Talend studio which get data from the REST service, transforms them into another form, loads to the Postgres database.	**2**	**8**	Practical work in the class, independent work. Connect two completely different data sources and create automated data exchange scenario between them.
	Implement system, document all in the coursework paper, create installation scripts.	**0**	**30**	Independent work. Scripts should be prepared and delivered in the form, then anybody else can take them and install in own system, testing and validation should be done.
	Presentation of the coursework, live demo, delivery of the installation scripts and coursework document (electronic form) which is results of independent work and accumulated all lessons learn.	**4**	**2**	Summarizes all the results of independent work, develops a course presentation, each student presents his / her performance to everyone else.
	Exam. Theoretical, speaking answer according to a ticket pulled out.	**2**	**6**	Review exam topics, theoretically present their knowledge of the "pulled out".
	Hours total:	***20***	***140***	