MODULE DESCRIPTION

Module title	Module code
Oracle PL/SQL programming	

Lecturer(s)	Department where the module is delivered
Coordinator: dr. Elita Pakalnickienė **Other lecturers:**	Department of Software Engineering Faculty of Mathematics and Informatics Vilnius University

Cycle	Type of the module
First	

Mode of delivery	Semester or period when the module is delivered	Language of instruction
Face-to-face	5, 6, 7 semester	Lithuanian

Prerequisites
Prerequisites: SQL knowledge

Number of credits allocated	Student's workload	Contact hours	Self-study hours
5	130	66	64

Purpose of the module: programme competences to be developed

Purpose of the module – to acquire knowledge of PL/SQL programming language capabilities, benefits, usage and main elements. To get PL/SQL language application experience, to learn writing effective, commented, well-designed and structured PL/SQL code and to execute it in SQL*PLUS environment.

Generic competences:

- Life-long learning *(GK2)*.

Specific competences:

- Knowledge and skills of underlying conceptual basis *(SK4)*.
- Software development knowledge and skills *(SK5)*.
- Technological and methodological knowledge and skills, professional competence *(SK6)*.

Learning outcomes of the module: students will be able to	Teaching and learning methods	Assessment methods
Understand relational database (procedural/modular) programming concept.	Lectures, problem-oriented teaching, case studies, literary reading, individual work, individual work, example studies, consultations, laboratory work.	Laboratory works in PL/SQL environment and results presentation, written exam (close-ended questions).
Develop independently the program units in PL/SQL language, implementing real-world scenario.		
Analyze problem, identify the needs and determine the most suitable PL/SQL language elements, required for effective solution.		
Design and implement modular, easy readable and maintainable PL/SQL applications which meet requirements.		
Apply tools for PL/SQL programming in practice.		

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Practice	Laboratory work (LW)	*Tutorial during LW*	**Contact hours**	**Self-study hours**	**Assignments**
Oracle programming language PL/SQL. It's history, benefits and usage.	2				2	*2*	**4**	**2**	Self-study of literature, self-preparation for 1st laboratory work
PL/SQL anonymous block. Scalar data types.	2				2		**4**	**4**	
Composite data types. Conditional statements, loop statements.	4				4		**8**	**8**	
Interacting with Oracle DB server (SQL statements in PL/SQL). Oracle sequences, transactions, cursors and records.	2				2	*2*	**4**	**4**	Self-study of literature, self-preparation for 2nd laboratory work
Stored procedures and functions.	2				2		**4**	**4**	
Packages and table level triggers.	2				2		**4**	**4**	
Exceptions handling.	6				6		**12**	**10**	
Dynamic SQL and PL/SQL.	2				2	*2*	**4**	**4**	Self-study of literature, self-preparation for 3rd laboratory work
Bulk processing with BULK COLLECT and FORALL.	4				4		**8**	**8**	
Large object data type, manipulating large objects.	2				2		**4**	**2**	
Oracle supplied packages. Working with files.	2				2		**4**	**2**	
Object-Oriented aspects of PL/SQL. Calling Java from PL/SQL	2				2		**4**	**2**	
Preparation for the exam and taking the final exam (written).							**2**	**10**	10 hours for preparation, 2 hours for exam
Total	**32**				**32**	*6*	**66**	**64**	

Assessment strategy	Weight %	Deadline	Assessment criteria
1st laboratory work	30%	7th week of semester	Student has to create properly working PL/SQL anonymous block which realizes selected algorithm. The program must be effective, well-structured, easy readable and maintainable. The program applies the most suitable PL/SQL language constructs for particular task (3 points). The penalty for exceeding the deadline is 20% for each delayed week.
2nd laboratory work	20%	12th week of semester	Student has to re-create anonymous block created during 1st laboratory work into stored sub-programs and to add exception handling part (2 points). The penalty for exceeding the deadline is 20% for each delayed week.
3rd laboratory work	30%	The last week of semester	Student has to create properly working PL/SQL program for effective work with data stored in DB tables. Program must be well-structured and designed, easy readable and maintainable, using advanced language features like bulk processing, dynamic statements and cursors (3 points). The penalty for exceeding the deadline is 20% for each delayed week.
Exam (written)	20%	During exam session	For the right to take the exam student must get assessment of all three laboratory works. Written exam consists of 20 close-ended questions each of them is assessed between 0 and 0.1 points. Maximum can be collected 2 points.

Author	Publishing year	Title	Number or volume	Publisher or URL
Required reading				
Elita Pakalnickienė		Lecture slides /in Lithuanian/		http://www.mif.vu.lt/~pakalnickiene
Recommended reading				
Steven Feuerstein, Bill Pribyl	2009	Oracle PL/SQL Programming	5	O'Reilly Media
	2005	Oracle DB PL/SQL User's Guide and Reference		http://docs.oracle.com/cd/B19306_01/appdev.102/b14261/toc.htm
Steven Feuerstein	2007	Oracle PL/SQL Best Practices	2	O'Reilly Media