COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Problem-based project	ITPBL2

Lecturers	Department where the course unit is delivered
Coordinator: Linas Būtėnas **Other lecturers:** lecturers of the department	Department of Computer Science II Faculty of Mathematics and Informatics Vilnius University

Cycle	Type of the course unit
First	Compulsory in the branch

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Individual work combined with lectures and seminars	4th semester	Lithuanian and English

Prerequisites

Number of ECTS credits allocated	Student's workload	Contact hours	Individual work
15	400	80	320

Purpose of the course unit: programme competences to be developed

Generic competences to be developed

- Ability to apply knowledge in practical situations *(BK1)*
- Knowledge and understanding of the subject area and understanding of the profession *(BK2)*
- Ability for abstract thinking, processing and analysing information *(BK3)*
- Ability to resolve problems *(BK4)*
- Ability to use information and communications technologies *(BK5)*
- Ability to plan and manage tasks *(BK6)*

Subject-specific competences to be developed

- Ability to apply general methods of the program design, make and analyse software requirements *(DK1)*
- Ability to analyse the algorithmic process of the task based on the general properties of the algorithm *(DK2)*
- Ability to develop the software project (or IT service) and to write its specification *(DK3)*
- Ability to do program and IT service testing and debugging *(DK4)*
- Ability to apply project management principles *(DK6)*
- Ability to build conceptual and physical data models based on information management and data modelling principles *(DK9)*

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Ability to understand the essence of the problem, to distinguish and analyse the requirements and restrictions, to find the existing solutions and to organize them, to foresee the possible solutions or the use of the existing solutions; ability to solve problems by applying knowledge in practice.	Inclusive lecture; discussions; project group work; individual studies of the literature; consultations; concept maps.	Project report; presentations in the seminars and participation in the debates; project defence; submission of project parts
Ability to present ideas, explain problems and their	Lab work; preparation of the	Project report;

solutions fluently, clearly, and in detail in written or in oral form.	project report and the slides; participation in the seminars (presentations and debates); discussions.	presentations in the seminars and participation in the debates; project defence
Ability to work in a group, participate in planning of the group activities, take responsibility for group work, show the initiative to distribute group tasks; ability to carry out individual or group tasks on time; knowledge of the main principles of project management; ability to use version control systems.	Project work; consultations.	Group work; plans of group activities
Ability to implement the programming part of the project in the programming language(s) chosen by the group, ability to generalize the interface of own or used software and dependencies on other hardware or software; ability to write user manuals.	Project work (programming part); lab tasks; preparation of the project report (user manuals); case study.	Project report and project programming part; project defence; project parts
Ability to present the algorithmic solutions in pseudo-code or in schemas, to explain them, and to evaluate their correspondence to the programming part.	Peer review; preparation of the project report.	Submitted project parts; project report
Ability to foresee test cases of own software, to define and implement them.	Workshop; implementation of the programming part of the project; case study.	Submitted project parts; project report; project defence
Ability to choose the suitable data model, ability to apply standard data structures.	Solving practical lab exercises; inclusive lecture; case study; preparation of the project report (design part);	Project report and the programming part; presentations in the seminars and participation in the debates

Course content: breakdown of the topics	**Individual work: time and assignments**							
	Lectures	Tutorials	Seminars	Laboratory work (LW)	*Consultation during LW*	**Contact hours**	**Individual work**	**Assignments**
1. Introduction to the module? Project market, group formation.			4			**4**		
2. Human-computer interaction			9			**9**	**18**	Analysis of the presented task.
3. Project testing and evaluation			4	4		**8**	**32**	Analysis of the problem and sources.
4. Project presentation (in written and orally)			16			**16**	**48**	Choosing the strategy for the solution..
5. Project implementation		31				**31**	**202**	Work planning.
Preparation for the exam and exam		4				**4**	**20**	
Exam						**8**		
Total	**0**		**33**	**4**		**80**	**320**	

Assessment strategy	**Weight %**	**Deadline**	**Assessment criteria**
Individual tasks	10	End of the semester	Each student prepares two individual tasks: peer-review and testing of the other group project. Students must distinguish advantages and disadvantages of projects, argument the missing principles, etc.
Written reports	10	During the semester	Student groups submit separate parts of the project and plans of group activities (2). The group either passes or

			not passes.
Participation in seminars	10	During the semester	Students participate in the seminars by presenting group work (5%) and participating in the debates (5%) about other students' projects and asking questions. Each student is evaluated individually – each time the group delegates the representative. Also, each group delegates the representatives to the seminar: they are active listeners and evaluators.
Project report and programming part	50	End of the semester	Each student group submits the project report with the programming part before the strict deadline. The evaluation criteria are: 1) form and fluency of the report, included necessary parts (15); 2) the organization of the related work and correct citation/references (10%); the complexity, clearness, practical part, and significance of the problem solution (25).
Project defence (exam)	20	Exam session	The group present the project using slides. Each student is presents a part of the project and is evaluated individually: clear and fluent presentation (10%) and ability to answer the questions (10%).

Author	**Publishing year**	**Title**	**Issue No or volume**	**Publishing house or Internet site**
Required reading				
A. Brilingaitė	2012	Problem-Based Project. Study Guide		
Coursera	2015	Human-Computer Design: an Introduction		
Optional reading				