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| **Course unit title** | **SYSTEM DESIGNING AND TOOLS** |
| **Course unit code** | DatZ6010 |
| **Type of course unit**  | A part – Compulsory part |
| **Level of course unit** | 2nd cycle (Master) |
| **Year of study**  | - |
| **Semester** | IV |
| **Number of ECTS credits** | 3 |
| **Name of lecturer(s)** | Natālija Zaiceva, Mg.ing. |
| **Learning outcomes of the course unit** | **Aims of the course**To develop and extend understanding about designing of software and computer system, its aims, notions, methods and tools.**Objectives of the course*** To acquaint students with principles, methods and tools for designing software and computer system.
* Master skills in development of IT solutions, using computerized tools.

To develop skills for critical conformity assessment of tools for software development project.**Results of the course (competences to be developed)**To extend knowledge about principles, methods and tools for software and computer system's designing. To develop skills and abilities for critical conformity assessment of tools for particular software development project. |
| **Mode of delivery** | Face-to-face |
| **Prerequisites and co-requisites** | Project management and Systemanalysis |
| **Recommended optional programme components** | - |
| **Course contents** | The aim of the course -to develop and extend understanding about designing of software and computer system, its aims, notions, methods and tools. In the course is given an overview of current software's engineering methodologies, paradigms, methods and tools. |
| **Course plan** |

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| **Theme** | **Sub-theme** |
| 1. Methodology of software and computer system's development
 | Software development environmentModels of system's life cycle: * linear model,
* prototyping model,
* RAD model,
* evolucionar model
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| 1. General conception of software designing
 | Abstraction, deatlisation, modularitySoftware architectureHierarchy of management and control,Data structure, software procedures,Information hidingPreparation of documentation |
| 1. Project planning of software and computer system's development
 | Computerized tools for planning |
| 1. Process-oriented approach in system's development
 | General conceptions |
| Usage of appropriate computerized designing tools |
| 1. Data oriented approach in system's development
 | General conceptions |
| Usage of appropriate computerized designing tools |
| 1. Designing of information systems
 | Data objectsER-diagramsData flow diagramsCompositions diagrams |
| 1. Object-oriented designing
 | Notions, priciples, methods and tools of object-oriented designing |
| Usage of appropriate computerized designing tools |
| 1. User's interface designing
 | General conceptions |
| Usage of appropriate computerized designing tools |
| 1. Designing of real time system
 | General conceptions |
| Usage of appropriate computerized designing tools |
| 1. Component based designing
 | Software and computer system's componentsClient-server systemsWeb-based systems |
| 1. Agile Software Development
 | General conceptions |
| Usage of appropriate computerized designing tools |
| 1. Extreme programming
 | General conceptions |
| Usage of appropriate computerized designing tools |

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| **Recommended or required reading** | 1. Jeffrey A. Hoffer, Joey F. George, Joseph S. Valacich. Modern Systems Analysis and Design, 4/E, Prentice Hall, 2005, 720 pp.
2. Roger S. Pressmann. Software Engineering. A Practitioner’s Approach. Third Edition. McGraw-Hill, Inc., 1992, 791 pp.
3. Ian Sommerville. Software Engineering. Fifth Edition. Addison-Wesley, 1996, 742 pp.
4. Schwalbe K. "Information Technology Project Management, Second Edition." - Course Technology. Thomson Learning, http://www.course.com/downloads/mis/schwalbe, 2002.
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| **Planned learning activities and teaching methods** | Lectures, practical works, student's individual work |
| **Assessment methods and criteria** | Students have to fulfil all tasks of individual work. They have to prepare 1-2 reports on given themes. |
| **Language of instruction** | English |
| **Work placement(s)** | N/a |