

Level: bachelor				
Course title: Architecture, Design and Patterns (code I281)				
Status: obligatory for the <i>Information Technologies</i> module, elective for <i>Computer Science</i> module				
ECTS: 7,5				
Requirements: Object-oriented programming 1 (I032)				
Learning objectives This course aims to introduce students to a multitude of modelling techniques and designs to address the issue of software architecture in the context of object-oriented software development. Course covers all aspects of software design from architectural features (styles, models and views) to design models that could be described as "a common solution to common problems in a given context" on the lower level of abstraction.				
Learning outcomes <i>Minimum:</i> Students should show clear understanding of the impact of abstraction, modelling, architecture, and patterns in software product development, and be able to critically discuss the key concepts of software architectures, designs and patterns. <i>Desirable:</i> Student should be able to critically discuss the architectural alternatives and alternative designs, to generate a reasonable alternative for the problem and select between them, to identify an appropriate pattern for the problem and create it, and to apply practical skills in generating and developing software architecture and design based on functional requirements.				
Syllabus <i>Theoretical instruction</i> Theoretical background of software architecture, analogy with architecture in general, the elements of software architecture, architectural styles (ABAS), architectural patterns (Event-based, Layered, Pipes & Filters, ...), architecture description languages, the interaction between requirements and architecture, master-plan vs. piecemeal growths, architecture analysis and evaluation (SAAM, Scenario-based evaluation), the architectural process and organization, model driven architecture, from the architecture to the model, re-usable architecture, design patterns, framework and tools. <i>Practical instruction</i> Case study analysis.				
Weekly teaching load				Other:
Lectures: 3	Exercises: 2	Other forms of teaching:	Student research:	