Course Unit Descriptor

Study Programme: Computing And Control Engineering

Course Unit Title: Software Specification and Modeling

Course Unit Code: E242

Name of Lecturer(s): Luburić Nikola, Slivka Jelena, Milosavljević Gordana

Type and Level of Studies: bachelor

Course Status (compulsory/elective): elective

Semester (winter/ summer): summer

Language of instruction: english

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 7

Prerequisites: none

Course Aims:.

Students learn about efficient and effective modeling and specification of software systems. They gain knowledge and skills necessary for analysis and specification of software requirements. They learn the basics of model based design. They learn about UML specifications.

Learning Outcomes:
After successfully finishing the course the students have these abilities: analysis of complex systems, specification of requirements according to the system and software and application of UML formalisms with modeling static and dynamic behavior of system and software..

Syllabus.
Basic software system model. Relationship between requirement specification, design specification and software system implementation. Basics of requirement engineering, process, expression, analysis, design specification, requirement verification and validation. Development of formal document – requirement specification. Basics of software design, static and dynamic modeling. Basics of UML, structure, organization and meta-model. UML diagrams: use case diagram, class diagrams, object diagrams, cooperation diagram, sequence diagram, activity diagram, state diagram. Advanced UML modeling: Interface, packets and physical architecture modeling. Architectural and design patterns and their application in software system architecture.

Required Reading:
Relevant literature in English, tbd

Weekly Contact Hours: 2	**Lectures: 3**	**Practical work: 0**

Teaching Methods:
In the theoretical part of the course, parallel with the introduction of knowledge and skills related to specification and modeling of systems and software , students from project teams of 3 to 5 members and working in teams practice what they have learnt on two typical projects of complex systems from real life. The first project deals with system which is primarily oriented towards data and manipulation of data and is modeled in tutor operating model. The second project deals with events driven system and its modeling is given to project teams. As part of lecture classes the teams report on their progress on the project. At the practical part of the course the students defend their project solutions.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			