Study Programme: Information Technology

Course Unit Title: Software Engineering Basics (Software engineering 1)

Course Unit Code: OAS114

Name of Lecturer(s): Professor Dragica Radosav, PhD

Type and Level of Studies: Bachelor Academic Degree

Course Status (compulsory/elective): Compulsory

Semester (winter/summer): Winter

Language of instruction: English

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

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

The main objective of the course is a synthesis of knowledge obtained from using modern information technology tools for developing software products. The specific objective of this course is to enable students to work independently in the development of software products. Specific tasks are related to achievement of theoretical and practical knowledge of the methodologically based development in software engineering, which is applied through the use of modern tools in software design.

Learning Outcomes:

Analysis and design of software projects based on object-oriented paradigms and new technologies. Creating a high-quality project documentation using CASE tools. Developing critical, logical and abstract thinking.

Syllabus:

Theoretical lessons

Types and characteristics of software products (software architecture paradigms). Software development tools. Design of a Software Product (modeling, UML, the process of object - oriented development). Redesign of software (software redesign process, How to do coding, analysis and simulation support to redesign). Software processes (software process models). Software processes and specifications (Definition of software requirements, techniques for specification of demands, Request types, the process of defining the method requires iterative development). Rating the quality of software products. The concept and components of CASE tools. CASE tools for software development - towards integration. Management project (Lifecycle Management Software). Software Reliability (models, techniques and metrics). Development of software products - demo example.

Practical lessons

Using object-oriented methods of software development and application of UML, software development using the software package Sybase Power Designer.

Required Reading:

1. Radosav, Dragica: Software engineering (Softversko inženjerstvo – In Serbian), Technical faculty “Mihajlo Pupin”, Zrenjanin, 2011.
2. Ljubica Kazi, Dragica Radosav: OSNOVE OBJEKTNO-ORJENTISANOG PROGRAMIRANJA SA PRIMERIMA U C#, praktikum za vežbe, Tehnicki fakultet "Mihajlo Pupin", Zrenjanin, 2018.
3. Booch, Grady, Jacobson, Ivar, Rumbaugh: UML User guide, 1999.

Weekly Contact Hours: 4	**Lectures:** 2	**Practical work:** 2

Teaching Methods:

Method of oral presentation, discussions, demonstrations, practical methods and laboratory work, analytical and synthetic methods, methods of abstracting, method of the systematization method analogy method model, method of case studies analysis, project method and method step by step.

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	5	Workshop in lab	5
Practical lab work	30	oral exam	30
Seminar work (s)	30		