Study program: Information Technology

Course title: SOFTWARE ENGINEERING

Teacher(s): Marija D. Blagojević

Course status: mandatory

Number of ECTS credits: 6

Prerequisite courses: none

Course objectives

Training students to apply techniques in the field of software engineering and software development, including UML modeling, designing and implementing systems, designing quality user interfaces, evaluating design validity, verifying, validating and testing software, agile methodologies, as well as techniques for maintaining software in order to develop quality software products.

Learning outcomes

After the successful completion of this course, students will have theoretical and practical knowledge about the formalization of system requirements in accordance with user needs, the application of object-oriented system design principles, as well as techniques and tools for software testing.

Content of the course

Theoretical teaching

Introduction to Software Engineering. Software process models. Analysis of requirements and specifications. Object-oriented analysis and creation of class diagrams using UML diagrams. Software tools for modelling. Advanced concepts of structural modelling. Advanced concepts of behavior modelling. System design and implementation. Design improvement techniques. Design assessment and validation. Use cases and user-oriented project solutions. Basic pattern design. Concept and principles of refactoring. Designing the user interface. Agile development of software products. Extreme programming. Software reuse. Verification and validation. Software testing. Automated testing tools. System delivery and maintenance. Maintenance techniques and tools. The future of software engineering.

Practical teaching

The knowledge acquired in lectures is applied in exercises through the implementation of a project that includes all phases of creating a software application in a specific programming language and/or a specific development environment.

Literature

[1] Јован Поповић, Основе софтверског инжењерства, CET 2019, ISBN - 978-86-7991-413-2

[2] Mark J. Price, C# 10 и .NET 6 модеран међуплатформски развој, Компјутер библиотека, 2022, ISBN 9788673105758

[3] Shari Lawrence Pfleeger, Joanne M. Atlee, Софтверско инжењерство-теорија и пракса, CET, ISBN: 86-7991-284-0

[4] Ranjot Singh, Easy Software Engineering, Notion Press, 2020. ISBN:9781648282478, 1648282474

[5] Mohapatra Prof. Amiya Kumar Hitesh (Rath), Fundamentals of Software Engineering, BPB Publications, 2020. 9789388176774, 9388176774

[6] Ian Sommerville, Software Engineering (10th Edition), Pearson education, 2016, ISBN 978-0-13-394303-0

Number of active teaching classes: 4	**Theoretical teaching: 2**	**Practical teaching: 2**

Teaching methods

Realization of lectures and exercises according to the model of interactive teaching (teaching methods: popular lecture, discussion, methods of practical work, workshops); activated forms of learning: verbal meaningful receptive learning, discovery learning, cooperative learning, practical learning.

Evaluation of knowledge (maximum number of points 100)

Pre-exam obligations	**Points**	**Final exam**	**Points**
Activities during teaching process	10	Final exam (written):	30
Practical teaching	/	Final exam (oral):	/
Colloquium	20		
Practical teaching	40		