

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Metode programskega inženirstva
Course title:	Software Engineering Methods

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 2. stopnja	Računalniške strukture in sistemi	1	2
Information and Communication Technologies, 2 nd cycle	Computer Structures and Systems	1	2

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

IKT2-695

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Druge oblike	Samost. delo Individ. work	ECTS
15	15			15	105	5

**Navedena porazdelitev ur velja, če je vpisanih vsaj 15 študentov. Drugače se obseg izvedbe kontaktnih ur sorazmerno zmanjša in prenese v samostojno delo. / This distribution of hours is valid if at least 15 students are enrolled. Otherwise the contact hours are linearly reduced and transferred to individual work.*

Nosilec predmeta / Lecturer:

Prof. dr. Barbara Koroušič Seljak

Jeziki /

Predavanja / Lectures: slovenščina, angleščina / Slovenian, English

Languages:

Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Zaključen študijski program prve stopnje s področja naravoslovja, tehnike ali računalništva.

Prerequisites:

Student must complete first-cycle study programmes in natural sciences, technical disciplines or computer science.

Vsebina:

Uvod:

zgodovinski pregled pristopov k načrtovanju programske opreme; modelno vodeno inženirstvo; agilni pristopi

Modeliranje programske opreme:

razvojni cikel načrtovanja programske opreme; metodologije in metode za analizo in načrtovanje programske opreme; osnove načrtovanja (strukturni / objektno-orientirani postopki); sodobni postopki za izdelavo diagramov (npr. modeliranje po industrijskem standardu UML); domensko specifični jeziki

Načrtovanje sistema:

Content (Syllabus outline):

Introduction:

historical overview of software-engineering approaches; model-driven engineering; agile approaches

Software modeling:

steps in developing software; software analysis and design – methods and methodologies; design basics – object oriented vs structured techniques; modern diagramming techniques (e.g. UML modelling); domain-specific languages

System design:

designing and constructing software – code – related issues

System testing:

<p>načrtovanje in oblikovanje programske opreme (vidik kodiranja)</p> <p>Testiranje sistema: analiza in testiranje izvorne kode, testiranje na ciljnim sistemu</p> <p>Vrednotenje sistema: osnove vrednotenja in ocenjevanja zmogljivosti sistemov; zagotavljanje varnosti pri kritičnih sistemih</p> <p>Dokumentacija: dokumentacija in vidiki kakovosti</p>	<p>analyzing and testing source code, in-target testing</p> <p>System validation: performance engineering basics; safety and mission critical systems</p> <p>Documentation: documentation and quality issues</p>
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Temeljna literatura in viri / Readings:

Izbrana poglavja iz naslednjih knjig: / Selected chapters from the following books:

- S. McConnell, *Code Complete: A Practical Handbook of Software Construction*, Second Edition. Microsoft Press, 2015.
- M. Cohn, *Succeeding with Agile: Software Development Using Scrum*, 1st Edition. Addison Wesley, 2010.
- M. Brambilla, J. Cabot, M. Wimmer, *Model-Driven Software Engineering in Practice (Synthesis Lectures on Software Engineering, Band 1)*. Morgan & Claypool Publishers, 2012.
- S. R. Pressman, *Software engineering - A practitioner's approach*, 6th edition. McGraw-Hill, 2005.
- L. A. Maciaszek and B. L. Liong, *Practical Software Engineering - A Case Study Approach*. Addison-Wesley, 2005.
- I. Sommerville, *Software Engineering*, 7th edition. Pearson Education, 2004.
- J. Cooling, *Software Engineering for Real-Time Systems*. Addison Wesley, 2003.

Cilji in kompetence:

Cilj predmeta je seznaniti študenta s sodobnimi metodami programskega inženirstva.

Kompetence študenta z uspešno zaključenim predmetom bodo vključevale razumevanje programskega inženirstva, poznavanje sodobnih metod in znanje o primerih uporabe le-teh.

Objectives and competences:

The goal of the course is to familiarize the student with the field of software engineering.

The competencies of the students completing this course successfully would include understanding of basic concepts from the area, familiarity with state-of-the-art methods, and knowledge of examples applications.

Predvideni študijski rezultati:

Študenti bodo z uspešno opravljenimi obveznostmi tega predmeta pridobili:

- razumevanje konceptov modeliranja tovrstnih sistemov
- poznavanje metodologij in metod za modeliranje programske opreme
- poznavanje osnov načrtovanja sistemov
- zmožnost modeliranja programske opreme ob upoštevanju značilnosti dane računalniške arhitekture
- sposobnost uporabe naprednih metod za analizo, testiranje in vrednotenje programske

Intended learning outcomes:

Students successfully completing this course will acquire:

- understanding of modelling concepts for real-time and embedded systems
- knowledge of methodologies and methods for software modelling
- to get familiar with system design basics
- ability to model software considering the characteristics of a system architecture
- ability to use advanced methods for software analysis, testing and performance evaluation
- to get familiar with documentation and quality

opreme • poznavanje konceptov izdelave kakovostne dokumentacije programske opreme
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issues of software

Metode poučevanja in učenja:

Predavanja, seminar, konzultacije, individualno delo
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Learning and teaching methods:

Lectures, seminar, consultancy, individual work

Načini ocenjevanja:

Delež (v %) /

Weight (in %)

Assessment:

Seminarska naloga	50 %	Seminar work
Ustni zagovor seminarske naloge	50 %	Oral defense of seminar work

Reference nosilca / Lecturer's references:

<ul style="list-style-type: none"> • G. Papa, B. Koroušič Seljak. „An artificial intelligence approach to the efficiency improvement of a universal motor“. <i>Eng. appl. artif. intell.</i> [Print ed.], vol. 18, pp. 47-55, 2005. • B. Koroušič Seljak. Web-based eHealth applications with reference to food composition data. <i>European journal of clinical nutrition</i>, 64, S121-S127, 2010. • K. Tsiouris, D. Miljković, B. Koroušič Seljak, M. Bohanec, et al. PD_Manager: a mHealth platform for Parkinson's disease patient management. <i>Healthcare technology letters</i>, ISSN 2053-3713, 2017, vol. 4, no. 3, str. 102-108. • T. Eftimov, B. Koroušič Seljak, P. Korošec. A rule-based named-entity recognition method for knowledge extraction of evidence-based dietary recommendations. <i>PloS one</i>, ISSN 1932-6203, 2017, vol. 12, no. 6, str. 0179488-1-0179488-32. • S. Mezgec, B. Koroušič Seljak. NutriNet : a deep learning food and drink image recognition system for dietary assessment. <i>Nutrients</i>, ISSN 2072-6643, 2017, vol. 9, no. 7, str. 657-1- 657-19.
