



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Razvoj informacijskih rešitev in storitev
Course title:	Development of Information Systems and Services

Študijski program in stopnja	Študijska smer	Letnik	Semester
Study programme and level	Study field	Academic year	Semester
Izobraževalno računalništvo 2. stopnja	/	2.	Zimski/ Autumn
Educational computer science 2nd level	/		

Vrsta predmeta / Course type

Izbirni / Mandatory

Univerzitetna koda predmeta / University course code:

Predavanja	Seminar	Vaje	Lab. vaje	Terenske vaje	Samost. delo	ECTS
Lectures	Seminar	Tutorial	Laboratory work	Field work	Individ. work	
30		30			90	5

Nosilec predmeta / Lecturer:

Marjan Heričko

Jeziki /

Predavanja / Lectures:

slovenski / slovene

Languages:

Vaje / Tutorial:

slovenski / slovene

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

Ni pogojev.

Prerequisites:

None.

Vsebina:

- Metodološke osnove razvoja informacijskih rešitev in storitev.
- Sodobni pristopi in notacijski standardi za modeliranje in načrtovanje informacijskih rešitev in storitev (npr. UML profili).
- Ogrodja procesnih modelov, konvencionalne in agilne metodologije.
- Razvoj na osnovi modelov.
- Produktne linije in tovarne za razvoj programske opreme in informacijskih rešitev.
- Ponovna uporaba na osnovi vzorcev.
- Od programskega do storitvenega inženirstva.
- Storitveno inženirstvo.
- SOA načrtovalski vzorci.
- Vrednotenje kakovosti uporabniških vmesnikov.
- Zagotavljanje kakovosti, metrike, testiranje.

Content (Syllabus outline):

- Development of information systems and services – a methodological approach.
- Advanced modeling approaches, techniques and standards (e.g. UML profiles).
- Process frameworks, conventional and agile methodologies
- Model driven development.
- Software Product Lines and Software Factories.
- Software patterns.
- From software to service engineering.
- Service engineering.
- SOA design patterns.
- Evaluation of User Interfaces.
- Software Quality Assurance, metrics, testing.

Temeljni literatura in viri / Readings:

- I. Sommerville, Software Engineering, 10th Ed, Pearson, 2015.
- K. S. Rubin, Essential Scrum: A Practical Guide to the Most Popular Agile Process, Addison-Wesley, 2012.
- M. Bell: Service-Oriented Modeling, Service Analysis, Design and Architecture, John Wiley & Sons, Hoboken, NJ, 2008.
- Aspect-Oriented, Model-Driven Software Product Lines, The AMPLE Way, Edited by: Awais Rashid, Jean-Claude Royer, Andreas Rummler, 2011.
- William E. Lewis, Software Testing and Continuous Quality Improvement, Third Edition, Taylor&Francis Group, Auerbach Publications, 2009.
- K. Schwaber and J. Sutherland: Software in 30 Days: How Agile Managers Beat the Odds, Delight Their Customers, And Leave Competitors In the Dust, Wiley, 2012.
- T. Erl: SOA Design Patterns, Prentice Hall, New York, 2009.

Cilji in kompetence:

Cilj predmeta je, da bodo študentje razumeli značilnosti sodobnih pristopov k razvoju informacijskih rešitev in storitev ter znali analizirati, izbrati, prilagoditi in uporabiti primerna procesna ogrodja kot tudi pripadajoče notacijske tehnike.

Objectives and competences:

The objective of the course is for students to be able to demonstrate understanding of the characteristics of advanced approaches to development of information systems and services in order to analyze, select, adapt and apply appropriate process models and corresponding graphical notations and diagramming techniques.

Predvideni študijski rezultati:**Intended learning outcomes:**

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben

- razložiti pomen metodološkega pristopa k razvoju informacijskih rešitev in storitev,
- izbrati in uporabiti primerne diagramске tehnike in notacije,
- z uporabo principov storitvenega inženirstva razviti poslovne storitve in rešitve,
- razvijati nove rešitve na osnovi načel ponovne uporabe,
- vrednotiti in primerjati kakovost informacijskih rešitev in poslovnih storitev.

Prenosljive/ključne spretnosti in drugi atributi:

- Spretnosti komuniciranja: komuniciranje z vsemi akterji v sklopu storitvenega inženirstva
- Uporaba informacijske tehnologije: uporaba sodobnih modelirnih ter integriranih razvojnih okolij.
- Organizacijske spretnosti: organizacija vlog in porazdelitev dela v skupini.
- Delo v skupini: sodelovanje v projektni skupini za razvoj informacijske in/ali poslovne storitve.

Knowledge and understanding:

On completion of this course the student will be able to

- explain the importance and characteristics of different IS development methodologies, techniques and approaches,
- select and apply appropriate diagramming techniques and notations,
- apply service engineering principles to develop enterprise services and solutions,
- develop new solutions using different reuse techniques,
- evaluate and compare software and enterprise service quality.

Transferable/Key Skills and other attributes:

- Communication skills: in with all actors involved in service engineering.
- Use of information technology: use of advanced modelling and development tools and integrated environments.
- Organisation skills: definition of roles and distribution of work.
- Working in a group: as a member of IS and/or service development project team.

Metode poučevanja in učenja:

- Predavanja,
- sprotna izgradnja in obravnava primerov,
- laboratorijske vaje.

Learning and teaching methods:

- Lectures,
- case building and case studies,
- lab work.

Načini ocenjevanja:

Delež
(v %) /

Weight
(in %)

Assessment:

<ul style="list-style-type: none"> • ustni izpit, • laboratorijske vaje, • pisni izpit. 	<p>30 %</p> <p>30 %</p> <p>40 %</p>	<ul style="list-style-type: none"> • oral exam, • lab work, • written exam.
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Reference nosilca / Lecturer's references:

<ul style="list-style-type: none"> • JOŠT, Gregor, HUBER, Jernej, HERIČKO, Marjan, POLANČIČ, Gregor. An empirical investigation of intuitive understandability of process diagrams. <i>Computer standards & interfaces</i>, 2016, vol. 48, str. 90-111, doi: 10.1016/j.csi.2016.04.006. [COBISS.SI-ID 19609366]. • LUKMAN, Tomaž, GODENA, Giovanni, GRAY, Jeffrey G., HERIČKO, Marjan, STRMČNIK, Stanko. Model-driven engineering of process control software beyond device-centric abstractions. <i>Control eng. pract.</i> 2013, vol. 21, no. 8, str. 1078-1096 • PAVLIČ, Luka, HERIČKO, Marjan, PODGORELEC, Vili, REPOLUSK, Polona. An entropy-based algorithm for proposing a suitable design pattern. <i>Informatica</i>, 2016, vol. 27, no. 4, str. 843-862, doi: 10.15388/Informatica.2016.114. [COBISS.SI-ID 20216342]. • BERANIČ, Tina, PODGORELEC, Vili, HERIČKO, Marjan. Towards a reliable identification of deficient code with a combination of software metrics. <i>Applied sciences</i>, 2018, vol. 8, no. 10, str. 1-24, doi: 10.3390/app8101902. [COBISS.SI-ID 21779990]. • KOUS, Katja, PUŠNIK, Maja, HERIČKO, Marjan, POLANČIČ, Gregor. Usability evaluation of a library website with different end user groups. <i>Journal of librarianship and information science</i>, 2018, str. -16, doi: 10.1177/0961000618773133. [COBISS.SI-ID 21450518].
