



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 Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	1.	Poletni/ Autumn
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

Izbirni / Mandatory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
45			45		90	6

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:

Razumevanje in poznavanje osnov

Prerequisites:

Basic understanding of information systems.

informatijskih sistemov.

Vsebina:

- Metodološke osnove razvoja informacijskih rešitev in storitev.
- Sodobni pristopi in notacijski standardi za modeliranje in načrtovanje informacijskih rešitev in storitev (npr. UML profili).
- Ogradja 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.
- Testiranje in metrike.

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.
- Testing and metrics.

Temeljni literatura in viri / Readings:

- Sommerville, Software Engineering, 9th Ed, Pearson, 2011.
- 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.
- P. Clements and L. Northrop, Software Product Lines : Practices and Patterns, Addison-Wesley, 2001.
- 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.
- M. Cohn: Succeeding with Agile: Software Development Using Scrum, Addison-Wesley Professional, 2009.
- T. Erl: SOA Design Patterns, Prentice Hall, New York, 2009.

Cilji in kompetence:

Cilj predmeta je, da študentje razumejo značilnosti sodobnih pristopov k razvoju

Objectives and competences:

The objective of the course is to understand characteristics of advanced

informativskih rešitev in storitev ter se usposobijo za vzpostavitev in operacionalizacijo storitvene paradigme. Na osnovi seznanitve z različnimi metodološkimi pristopi bo študent sposoben izbrati, prilagoditi in uporabiti primerna procesna ogrodja kot tudi pripadajoče notacijske tehnike.

approaches to development of information systems and services in order to establish open service-based architectures and solutions. Students will be able to select, define and use appropriate process models and corresponding graphical notations and diagramming techniques.

Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben

- izkazati znanje in razumevanje pomena metodološkega pristopa k razvoju informativskih rešitev in storitev,
- z uporabo principov storitvenega inženirstva razviti poslovne storitve in rešitve,
- razvijati nove rešitve na osnovi načel ponovne uporabe,
- uporabiti sodobna okolja in programska orodja pri načrtovanju, razvoju, uporabi in upravljanju informativskih rešitev in storitev,
- testirati in vrednotiti kakovost informativskih rešitev in poslovnih storitev.

Prenosljive/ključne spretnosti in drugi atributi:

- Spretnosti komuniciranja: komuniciranje z vsemi akterji v sklopu storitvenega inženirstva
- Uporaba informativske 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

Intended learning outcomes:

Knowledge and understanding:

On completion of this course the student will be able to

- understand the importance and characteristics of different IS development methodologies, techniques and approaches,
- apply service engineering principles to develop enterprise services and solutions,
- develop new solutions using different reuse techniques,
- use advanced tools and environments in design, development, deployment and management of information systems and enterprise services,
- test and evaluate 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

informatijske in/ali poslovne storitve.

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 %) /

Assessment:

Weight
(in %)

- pisni izpit,
- ustni izpit,
- laboratorijske vaje.

40 %
30 %
30 %

- written exam,
- oral exam,
- lab work.

Reference nosilca / Lecturer's references:

- KRAJNC, Andrej, HERIČKO, Marjan, GERLEC, Črt, GOLJAT, Uroš, POLANČIČ, Gregor. Experimental investigation of the quality and productivity of software factories based development. *Comput. Sci. Inf. Syst.*, 2012, vol. 9, iss. 2, str. 667-689,
- POLANČIČ, Gregor, JOŠT, Gregor, HERIČKO, Marjan. An experimental investigation comparing individual and collaborative work productivity when using desktop and cloud modeling tools. *Empirical software engineering*, Sep. 2013, str. 1-34
- RADJENVIĆ, Danijel, HERIČKO, Marjan, TORKAR, Richard, ŽIVKOVIČ, Aleš. Software fault prediction metrics : a systematic literature review. *Information and software technology*, 2013, vol. 55, iss. 8, str. 1397-1418
- PAVLIČ, Luka, PODGORELEC, Vili, HERIČKO, Marjan. A question-based design pattern advisement approach. *Computer Science and Information Systems*, 2014, vol. 11, no. 2, str. 645-664
- LUKMAN, Tomaž, GODENA, Giovanni, GRAY, Jeffrey G., HERIČKO, Marjan, STRMČNIK, Stanko. Model-driven engineering of process control software beyond device-centric abstractions. *Control eng. pract.* 2013, vol. 21, no. 8, str. 1078-1096