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**
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	1.	**Zimski/**
Five-year master's degree program Subject Teacher	/		**Autumn**

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**	
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:	Prerequisits:
Ni pogojev.	None.

Vsebina: **Content (Syllabus outline):**

• Metodološke osnove razvoja informacijskih rešitev in storitev.	• Development of information systems and services – a methodological approach.
Sodobni pristopi in notacijski standardi za modeliranje in načrtovanje informacijskih rešitev in storitev (npr. UML profili).	Advanced modeling approaches, techniques and standards (e.g. UML profiles).
Ogrodja procesnih modelov, konvencionalne in agilne metodologije.	Process frameworks, conventional and agile methodologies.
Skaliranje agilnih pristopov.	Scaling agile processes.
Neprekinjen razvoj, integracija, testiranje, namestitev, dobava in spremljanje.	Continuous development, integration, testing, delivery, deployment and monitoring.
Razvoj na osnovi modelov.	Model driven development.
Produktne linije in tovarne za razvoj programske opreme in informacijskih rešitev.	Software Product Lines and Software Factories.
Ponovna uporaba na osnovi vzorcev.	Software patterns.
Od programskega do storitvenega inženirstva.	From software to service engineering.
Storitveno inženirstvo.	Service engineering.
Zasnova in načrtovanje storitev z vzorci.	Service conceptualization and design patterns.
Vrednotenje kakovosti uporabniških vmesnikov	Evaluation of User Interfaces
Zagotavljanje kakovosti, metrike, testiranje.	Software quality assurance, metrics, testing.

Temeljni literatura in viri / Readings:

- I. Sommerville, Software Engineering, 10th Ed, Pearson, 2016.
- K. S. Rubin, Essential Scrum: A Practical Guide to the Most Popular Agile Process, Addison-Wesley, 2012.
- C. Larman, B. Vodde, Large-Scale Scrum: More with LeSS, Addison-Wesley, 2017.
- V. Vernon, Domain-Driven Design Distilled, Addison-Wesley, 2016.
- C. Richardson, Microservices Patterns: With Examples in Java, Manning Publications, 2018.
- William E. Lewis, Software Testing and Continuous Quality Improvement, Third Edition, Taylor&Francis Group, Auerbach Publications, 3rd Ed, 2016.

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:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben

- • razložiti pomen metodološkega pristopa k razvoju informacijskih rešitev in storitev,
- izbrati in uporabiti primerne diagramske 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.

Intended learning outcomes:

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:

• ustni izpit,	30 %	• oral exam,
• laboratorijske vaje,	30 %	• lab work,
• dva kolokvija.	40 %	• two midterm written exams.

Opomba: Kolokvija se lahko nadomesti s pisnim izpitom.

Note: Midterm written exams may be replaced by a written exam.

Reference nosilca / Lecturer's references:

- JOŠT, Gregor, HUBER, Jernej, HERIČKO, Marjan, POLANČIČ, Gregor. An empirical investigation of intuitive understandability of process diagrams. Computer standards & interfaces, 2016, vol. 48, str. 90-111, doi: 10.1016/j.csi.2016.04.006. [COBISS.SI-ID 19609366].
- PAVLIČ, Luka, HERIČKO, Marjan. Izzivi pri prilagoditvi in vpeljavi agilnih razvojnih metod v večje podjetje. V: URH POPOVIČ, Špela (ur.). Digitalizacija in mi : zbornik. 1. izd. Ljubljana: Slovensko društvo Informatika. 2018, str. 1-4, ilustr. [COBISS.SI-ID 21399318]
- TURKANOVIĆ, Muhamed, HÖLBL, Marko, KOŠIČ, Kristjan, HERIČKO, Marjan, KAMIŠALIĆ, Aida. EduCTX: A blockchain-based higher education credit platform. IEEE access, ISSN 2169-3536, 5 Jan. 2018, vol. 6, iss. 1, str. 5112-5127, doi: 10.1109/ACCESS.2018.2789929. [COBISS.SI-ID 21085718]
- BERANIČ, Tina, PODGORELEC, Vili, HERIČKO, Marjan. Towards a reliable identification of deficient code with a combination of software metrics. Applied sciences, 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. Journal of librarianship and information science, 2018, str.-16, doi: 10.1177/0961000618773133. [COBISS.SI-ID 21450518].