



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Razvoj informacijskih rešitev in storitev
<b>Course title:</b>	Development of Information Systems and Services

<b>Študijski program in stopnja</b>	<b>Študijska smer</b>	<b>Letnik</b>	<b>Semester</b>
<b>Study programme and level</b>	<b>Study field</b>	<b>Academic year</b>	<b>Semester</b>

<b>Enovit magistrski študijski program druge stopnje Predmetni učitelj</b>	/	<b>4. ali 5.</b>	<b>8. ali 9.</b>
<b>Five-year master's degree program Subject Teacher</b>	/		

**Vrsta predmeta / Course type**

Izbirni / Elective

**Univerzitetna koda predmeta / University course code:**

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

**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:**

**Content (Syllabus outline):**

- 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.
- Skaliranje agilnih pristopov.
- Neprekinjen razvoj, integracija, testiranje, namestitve, dobava in spremljanje.
- 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.
- Zasnova in načrtovanje storitev z vzorci.
- Vrednotenje kakovosti uporabniških vmesnikov
- Zagotavljanje kakovosti, metrike, testiranje.

- 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.
- Scaling agile processes.
- Continuous development, integration, testing, delivery, deployment and monitoring.
- Model driven development.
- Software Product Lines and Software Factories.
- Software patterns.
- From software to service engineering.
- Service engineering.
- Service conceptualization and design patterns.
- Evaluation of User Interfaces
- Software quality assurance, metrics, testing.

#### Temeljni literatura in viri / Readings:

- I. Sommerville, Software Engineering, 10<sup>th</sup> 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, 3<sup>rd</sup> 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 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.

**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:**

<ul style="list-style-type: none"> <li>• ustni izpit,</li> <li>• laboratorijske vaje,</li> <li>• dva kolokvija.</li> </ul>	30 % 30 % 40 %	<ul style="list-style-type: none"> <li>• oral exam,</li> <li>• lab work,</li> <li>• two midterm written exams.</li> </ul>
--	----------------------	---

Opomba: Kolokvija se lahko nadomesti s pisnim izpitom.

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

#### Reference nosilca / Lecturer's references:

<ul style="list-style-type: none"> <li>• PAVLIČ, Luka, BERANIČ, Tina, HERIČKO, Marjan. A product quality impacts of a mobile software product line : an empirical study. PeerJ computer science. 27 April 2021, str. 1-26. ISSN 2376-5992. <a href="https://peerj.com/articles/cs-434/">https://peerj.com/articles/cs-434/</a>, DOI: 10.7717/peerj-cs.434. [COBISS.SI-ID 61614595],</li> <li>• PAVLIČ, Luka, HERIČKO, Marjan, BERANIČ, Tina. An expert judgment in source code quality research domain - a comparative study between professionals and students. Applied sciences. 2020, vol. 10, iss. 20, str. 1-13, ilustr. ISSN 2076-3417. DOI: 10.3390/app10207088. [COBISS.SI-ID 32936707], [JCR, SNIP, WoS, Scopus]</li> <li>• KOUS, Katja, KUCHAR, Saša, PAVLINEK, Miha, HERIČKO, Marjan, PUŠNIK, Maja. Web accessibility investigation of Slovenian municipalities' websites before and after the adoption of European Standard EN 301 549. Universal access in the information society. Aug. 2021, vol. 20, str. 595-615. ISSN 1615-5289. DOI: 10.1007/s10209-020-00732-9. [COBISS.SI-ID 22649347]</li> </ul>
--