UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Razvoj programske opreme
Course title:	Software Development

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Računalništvo in spletne tehnologije, visokošolski strokovni študijski program prve stopnje	-	Drugi	Tretji
Computer Science and Web Technologies, first cycle Professional Study Programme	-	Second	Third

Vrsta predmeta / Course type | Obvezni / Obligatory

Univerzitetna koda predmeta / University course code: | 2-RST-MAG-RPR-2019-03-05

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	/	45	/	/	105	6

Nosilec predmeta / Lecturer:

Jeziki / **Languages:**	**Predavanja /** **Lectures:**	slovenski / Slovenian, angleški / English
	Vaje / Tutorial:	slovenski / Slovenian, angleški / English

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

Študent/študentka mora pred pristopom k izpitu imeti pozitivno ocenjene vaje in seminarsko nalogo.

Predmet zahteva predznanja o podatkovnih strukturah in algoritmih pridobljena v okviru predmetov Programiranje in Algoritmi.

Prerequisits:

Positively evaluated exercises and seminar paper are a prerequisites for exam.

Course requires knowledge of data structures and algorithms obtained within the courses Programming and Algorithms.

Vsebina:

Content (Syllabus outline):

• Uvod v predmet: Namen študija predmeta, povezanost predmeta z drugimi predmeti, vsebina študija predmeta, študijska literatura. • Življenjski cikel programske opreme: strategija, načrtovanje, analiza, oblikovanje, razvoj, uvajanje in vzdrževanje. • Pregled metodologij razvoja informacijskih sistemov. • Karakteristike metodologij in izbira metodologije. • Strukturne metode razvoja programske opreme • Objektni orientirani razvoj, Poenoteni proces. • Agilne metodologije: SCRUM, Kanban, Lean development, XP • Zajem in analiza uporabniških zahtev • Modeliranje procesov in podatkov, objektno modeliranje z UML. • Testiranje programske opreme, zagotavljanje kvalitete. • Dokumentiranje programske opreme.	• Introduction**:** The purpose of the subject, connections with other subjects, subject contents, study literature. • Software lifecycle: strategy, planning, design, development, deployment, operation and maintenance, support. • Overview of information systems development methodologies. • Characteristics of methodologies and methodology selection. • Structured software development methods • Object oriented development, Unified Process, UML based modelling • Agile methodologies: SCRUM, Kanban, Lean development, XP • User requirements gathering and analysis. • Process and data modelling, object based modelling with UML. • Software testing, quality management. • Software documentation.

Temeljni literatura in viri / Readings:

- VALACICH, J., GEORGE, J., Modern Systems Analysis and Design (8th Edition), Pearson, 2017
- DENNIS, A., WIXOM, B., TEGARDEN, D., Systems Analysis and Design with UML 4th Edition, Wiley, 2012
- WHITTEN, JEFFREY L. in BENTLEY, LONNIE D. (2007) *Introduction to Systems Analysis and Design*. McGrawHill.
- METCALFE, G., Scrum Project Management, Gary Metcalfe, 2018.
- LARMAN, C., Agile and Iterative Development: A Manager's Guide, Addison-Wesley, 2003.

Cilji in kompetence:	**Objectives and competences:**
Učna enota prispeva k razvoju naslednjih splošnih in predmetno-specifičnih kompetenc: *Splošne kompetence:* • sposobnost algoritmičnega razmišljanja. • razvoj kritične in samokritične presoje sposobnost fleksibilne uporabe znanja v praksi; • uporaba metodoloških orodij, t.j. izvajanje, koordiniranje in organiziranje raziskav, uporaba raznih raziskovalnih metod in tehnik; • usposobljenost za samostojno in avtonomno uporabo, nadzor in vzdrževanje informacijsko	*The instructional unit contributes to the development of the following general and subject-specific competences:* *General competences:* • ability of algorithmic thinking; • the development of critical and self-critical assessment; • the use of methodological tools, i.e. implementation, coordination and organization of research, the use of different research methods and techniques; • the ability to manage and maintain an information system and individual

komunikacijske tehnologije v organizaciji; • sposobnost obvladovanja in pretvorbe realnega problema v obliki lažje predstavljivega modela. *Predmetno-specifične kompetence:* • sposobnost izbire uporabe informacijsko-komunikacijske tehnologije, orodij in sistemov za načrtovanje informacijskih sistemov • samostojno reševanje zahtevnih razvojnih in inženirskih in organizacijskih nalog na področju razvoja programske opreme.	applications of information communication technology; • ability to manage and transform a real-life problem into the form of an easier to perceive model. *Subject-specific competences:* • the ability to choose information and communication technologies, tools and systems for designing and implementing information systems • independently tackle demanding developmental and engineering tasks in software development

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: *Študent/študentka:* • prepozna procese, ki jih je mogoče informacijsko podpreti z informacijskim sistemom • je zmožen identificirati prispevek informacijskega sistema k dodani vrednosti organizacije • pozna in razume življenjski cikel programske opreme • pozna in razume prednosti in pomanjkljivosti različnih metodologij in tehnik za analizo in razvoj programske opreme • pozna in uporablja metode in tehnike informacijskega inženiringa • pozna in uporablja osnovne elemente jezika UML • pozna in uporablja tehnike agilnega razvoja • je zmožen sodelovati pri analizi in razvoju informacijskega sistema organizacije • je zmožen sinteze znanj in metod pri razvoju programske opreme	Knowledge and understanding: *The student:* • recognizes processes that can be supported by an information system • is able to identify the contribution of the IS to the organization's added value • knows and understands software lifecycle • knows and understands the strengths and weaknesses of various analysis and development methodologies and techniques • knows and uses information engineering methods and techniques • knows and uses elementary UML syntax • knows and uses agile development techniques • is able to take part in information system analysis and development activities • is able to conduct a synthesis of knowledge and methods in software development

Metode poučevanja in učenja:	**Learning and teaching methods:**
• *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov) • *laboratorijske vaje* (delo na osebnem računalniku, spoznavanje različnih vrst informacijskih sistemov, spoznavanje orodij za analizo, uporaba različnih diagramskih tehnik)	• *lectures* with emphasis on students' activity (explanation, discussion, cases, problem solving) • *laboratory training* (work on a personal computer, getting acquainted with several kinds of information systems, learning to use analysis tools and diagramming techniques)

• individualne in skupinske *konzultacije* (diskusija, dodatna razlaga, obravnava specifičnih vprašanj)		• individual and group consultations (discussion, additional explanation, specific issues)

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt):		Type (examination, oral, coursework, project):
• pisni izpit	50 %	• written exam
• empirična seminarska naloga, poročila laboratorijskih vaj	50 %	• empirical seminar work, report on laboratory exercises