UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Življenjski cikel razvoja spletne in mobilne aplikacije
Course title:	Web and Mobile Application Development Life-Cycle

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Informatika v sodobni družbi, visokošolski strokovni študijski program prve stopnje	-	Tretji	Peti
Informatics in Contemporary Society, first cycle Professional Study Programme programme	-	Third	Fifth

Vrsta predmeta / Course type	Izbirni / Elective
Univerzitetna koda predmeta / University course code:	1-ISD-VS-IP-ŽCRSMA-2024-09-12

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

Nosilec predmeta / Lecturer:	prof. dr. Srđan Škrbić

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenski / Slovenian, Angleški / English
	Vaje / Tutorial:	Slovenski / Slovenian, Angleški / English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Pogoj za vključitev v delo je vpis v 2. letnik študija. Študent/študentka mora pred pristopom k izpitu pripraviti in uspešno zagovarjati projektno nalogo.	Prerequisite for inclusion is enrolment into the second year of the study. Prior to the exam, the student has to prepare and successfully defend the project.

Vsebina:	**Content (Syllabus outline):**
• Življenjski cikel spletnih in mobilnih aplikacij v različnih sodobnih programskih metodologijah in procesih: o Tradicionalni programski procesi - faze, statična struktura procesa, delovni tokovi. o Agilni programski procesi - Scrum in Kanban metodologije s poudarkom na popolnem poznavanju programskega procesa Scrum	• Life cycle of web and mobile applications in various modern software methodologies and processes: o Traditional software process - phases, static process structure and workflows. o Agile software processes - Scrum and Kanban methodologies with an emphasis on complete

- Razvoj Android mobilnih aplikacij:
  - Programski jezik Kotlin.
  - Ustvarjanje Android projekta in njegovo izvajanje v napravi ali emulatorju.
  - Arhitektura Android aplikacij in model MVVM (Model – View – ViewModel).
  - Odzivanje na dogodke v Android aplikacijah.
  - Interakcija z elementi uporabniškega vmesnika in stanjem aplikacije.
  - Navigacija v Android aplikacijah.

knowledge of the Scrum software process

- Development of Android mobile applications:
  - Kotlin programming language.
  - Creating an Android project, and running it on a device or emulator.
  - The architecture of Android applications and MVVM (Model – View – ViewModel) model.
  - Responding to events in Android applications.
  - Interacting with user interface elements and application state.
  - Navigation in Android applications.

Temeljni literatura in viri / Readings:

- John Horton, "Android Programming for Beginners", 3rd edition, Packt publishing, 2021.
- Catalin Ghita: "Kickstart Modern Android Development with Jetpack and Kotlin", Packt Publishing, 2022.
- Mark Merkow, "Secure, Resilient, and Agile Software Development", Auerbach Publications, 2023.
- Capers Jones, Software Development Patterns and Antipatterns, Auerbach Publications, 2021.
- Henrik Kniberg, "Scrum and XP from the Trenches", Lulu,com, 2nd edition, 2015.
- Chris Sims, Hillary Louise Johnson, "Scrum: a Breathtakingly Brief and Agile Introduction", Dymaxicon, 2012.
- Andrew Stellman, Jack P. Greene, "Learning Agile: Understanding Scrum, XP, Lean, and Kanban", O'Reilly, 2014.
- Jeff Sutherland, "Scrum: The Art of Doing Twice the Work in Half the Time", Crown Business, 2014.
- Philippe Kruchten, "The Rational Unified Process: An Introduction", 3rd edition, Addison-Wesley, 2003.
- C. Sims, H.L. Johnson: The Elements of Scrum, Dymaxicon, 2011.

Cilji in kompetence:

Učna enota prispeva k razvoju naslednjih splošnih in predmetno-specifičnih kompetenc:

Splošne kompetence:

- usposobljenost za izvajanje vseh faz razvoja spletnih in mobilnih aplikacij: načrtovanje, razvoj, zagon, prodaja, vzdrževanje
- poznavanje in razumevanje procesov, ki jih je mogoče informacijsko podpreti z uporabo spletnih tehnologij, ter

Objectives and competences:

The instructional unit contributes to the development of the following general and subject-specific competences:

General competences:

- competence to carry out all phases in the development of web and mobile applications: planning, development, start-up, sales, maintenance
- familiarity with and understanding of processes allowing information-aided use of web technologies, and the ability

sposobnost za njihovo analizo, sintezo in predvidevanje rešitev ter njihovih posledic • zmožnost skupinskega dela v vseh fazah razvoja spletnih in mobilnih rešitev • poznavanje pomena kakovosti in prizadevanje za kakovost strokovnega dela skozi avtonomnost, samoiniciativnost, (samo)kritičnost, (samo)refleksivnost in (samo)evalviranje v strokovnem delu • poznavanje spletnih poslovnih modelov *Predmetno-specifične kompetence:* • poznavanje uporabe različnih vrst modelov/arhitektur, ki se uporabljajo za razvoj mobilnih aplikacij skozi pristop kritične analize • poznavanje elementov in strukture mobilnih razvojnih ogrodij in znanje, kako in kdaj je potrebno uporabiti različne sestavne dele za razvoj delovnega sistema skozi pristop kritične analize in reševanja problemov • zmožnost uporabe programske opreme za razvoj različnih zgoraj opisanih modelov skozi pristop kritične analize in reševanja problemov • poznavanje zmogljivosti in omejitve različnih mobilnih računalniških naprav skozi pristop kritične analize • zmožnost načrtovanja, izvajanja in razporeditve mobilnih aplikacij, ki uporabljajo ustrezno okolje za razvoj programske opreme skozi pristop reševanja problemov.	to analyse and synthesize them as well as predict solutions and their consequences • ability to operate within a team during all phases of development of web and mobile solutions • familiarity with the importance of quality, striving to maintain the quality of professional work through practicing autonomous behaviour, showing initiative, as well as through (self-) criticism, (self-) reflection and (self-) evaluation • familiarity with web business models *Subject-specific competences:* • ability to describe and apply the different types of application models/architectures used to develop mobile software applications through critical analysis • ability to describe the components and structure of mobile development frameworks and knowing how and when to apply the different components to develop a working system through critical analysis and problem solving • ability to describe and apply software patterns for the development of the application models described above through critical analysis and problem solving • ability to describe and work within the capabilities and limitations of a range of mobile computing devices through critical analysis • ability to design, implement and deploy mobile applications using an appropriate software development environment through problem solving
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: *Študent/študentka:* • pozna in razume pomembnost poznavanja celotnega življenjskega cikla razvoja spletne/mobilne aplikacije • zna priporočiti ustrezen programski proces za določen projekt razvoja spletne ali mobilne aplikacije in utemeljiti svojo izbiro	Knowledge and understanding: *The student:* • knows and understands the importance of knowing the development of the web / mobile application' life cycle • is able to recommend appropriate software process for a given web or

• demonstrira razumevanje in sposobnost timskega in individualnega dela na področju identifikacije, zasnove, planiranja, razvoja, oblikovanja, prodaje in trženja spletne/mobilne aplikacije	mobile application development project and justify his choice • demonstrates understanding and ability in regard to either teamwork or individual work on the identification, design, planning, development, sales and marketing of web/mobile applications

Metode poučevanja in učenja:	**Learning and teaching methods:**
• *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov) • *seminarske vaje* (refleksija izkušenj, projektno delo, timsko delo, metode kritičnega mišljenja, diskusija) • individualne in skupinske *konzultacije* (diskusija, dodatna razlaga, obravnava specifičnih vprašanj)	• *lectures* with active student participation (explanation, discussion, questions, examples problem solving) • *seminars* (reflexion about experiences, project work, teamwork, method of critical thinking, discussion) • individual and group *consultations* (discussion, additional explanation, treatment of specific questions)

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt):		Type (examination, oral, coursework, project):
• pisni izpit	50	• written exam
• projektna naloga	50	• project

Reference nosilca / Lecturer's references:

- Jović, Milan, Šubelj, Lovro, Golob, Tea, Makarovič, Matej, Yasseri, Taha, Krstićev, Danijela Boberić, Škrbić, Srdjan, and Levnajić, Zoran: Terrorist attacks sharpen the binary perception of "Us" vs. "Them". Sci Rep 13, 12451 (2023). https://doi.org/10.1038/s41598-023-39035-3
- George Bravos, Antonio J. Cabrera, Camilo Correa, Dragan Danilovic, Nikolaos Evangeliou, Gilad Ezov, Zoran Gajica, Dusan Jakovetic, Leonidas Kallipolitis, Milan Lukic, Julien-Etienne Mascolo, Davide Masera, Raúl Mazo, Ivan Mezei, Andreas I. Miaoudakis, Nemanja Milosevic, William Oliff, Jacques Robin, Michail Smyrlis, Georgia Sakellari, Giorgos Stamatis, Dusan Stamenkovic, Srdan Skrbic, Carine Souveyet, Spyridon Vantolas, Giorgos Vasiliadis, Dejan Vukobratovic: Cybersecurity for Industrial Internet of Things: Architecture, Models and Lessons Learned. IEEE Access 10: 124747-124765 (2022)
- Fodor, L., Jakovetić, D., Boberić Krstićev, D. *et al.* A parallel ADMM-based convex clustering method. *EURASIP J. Adv. Signal Process.* 2022, 108 (2022). https://doi.org/10.1186/s13634-022-00942-8
- Lidija Fodor, Dusan Jakovetic, Natasa Krejic, Natasa Krklec Jerinkic, Srdan Skrbic: Performance evaluation and analysis of distributed multi-agent optimization algorithms with sparsified directed communication. EURASIP J. Adv. Signal Process. 2021(1): 25 (2021)
- Milos Savic, Milan Lukic, Dragan Danilovic, Zarko Bodroski, Dragana Bajovic, Ivan Mezei, Dejan Vukobratovic, Srdjan Skrbic, Dusan Jakovetic: Deep Learning Anomaly Detection for Cellular IoT With Applications in Smart Logistics. IEEE Access 9: 59406-59419 (2021)
- Pannipa Sae-Ueng, Srdjan Skrbic: Priority fuzzy database management system implementation based on extensions to the XQuery language. J. Intell. Fuzzy Syst. 38(4): 4107-4118 (2020)