

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Projekt razvoja spletne programske rešitve
Course title:	Web application development project

Izobraževalni program in stopnja Educational programme and level	Študijska smer Study field	Akademsko leto Academic year
NOO projekt piloti: Naprednejša računalniška znanja (nivo: visokošolski strokovni študijski program)	Programiranje in razvoj aplikacij	2024/25
RRP pilot project: Advanced computer skills (level: first cycle professional study programme)	Programming and application development	2024/25

Vrsta predmeta / Course type Obvezni / Obligatory

Univerzitetna koda predmeta / University course code: NOO-PRA-VS-PRSPR-2024-25

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

Študent/-ka lahko pristopi k ustemu izpitu, ko zaključi projektno nalogo.

Prerequisites:

Student can take part in the oral exam after he/she completes his/her project.

Vsebina:

- Arhitektura modernih spletnih aplikacij
- Aktualne tehnologije za razvoj zalednega dela spletne aplikacije
- Razvoj zalednega dela spletne aplikacije z enim od aktualnih ogrodij, vključujoč:
 - Povezovanje s sistemom za upravljanje z relacijsko

Content (Syllabus outline):

- Architecture of modern web applications.
- State-of-the-art technologies for web application backend development.
- Development of web application backend based on state-of-the-art framework including:
 - connecting to a relational database management system and object-relational mapping

<p>podatkovno bazo in objektno-relacijske preslikave</p> <ul style="list-style-type: none"> ○ Razvoj RESTFUL API-ja in povezovanje uporabniškega in zalednega dela ○ Varnostni vidiki in namestitve spletne aplikacije <ul style="list-style-type: none"> ● Študija primera: Neodvisen razvoj celotne spletne aplikacije z uporabo izbranih ogrodij. 	<ul style="list-style-type: none"> ○ development of RESTful API and connecting frontend and backend through the RESTful API ○ security issues and deployment of web application. <ul style="list-style-type: none"> ● Case study: independent development of a complete web application using adopted frontend and backend frameworks.
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Temeljni literatura in viri / Readings:

<ul style="list-style-type: none"> ● Somnath, M (2022) <i>Sprint Boot in Practice</i>. Manning. ● Heckler, M. (2021) <i>Spring Boot: Up and Running</i>. O'Reilly Media. ● Walls, C. (2015). <i>Spring Boot in Action</i>. Manning. ● Juneau, J. (2018). <i>Java EE 8 Recipes: A Problem-Solution Approach</i>. Apress. ● Heffelfinger, D. R. (2017). <i>Java EE 8 Application Development</i>. Packt Publishing. ● Noback, M. (2020). <i>Advanced Web Application Architecture</i>. Leanpub.

Cilji in kompetence:

<p><i>Učna enota prispeva k razvoju naslednjih splošnih in predmetno-specifičnih kompetenc:</i></p> <p><i>Splošne kompetence:</i></p> <ul style="list-style-type: none"> ● usposobljenost za izvajanje vseh faz razvoja spletnih aplikacij: načrtovanje in razvoj ● zmožnost skupinskega dela v vseh fazah razvoja spletnih rešitev ● obvladovanje postopkov zagotavljanja varnega in stabilnega delovanja spletnih in sprotnega odpravljanja napak <p><i>Predmetno-specifične kompetence:</i></p> <ul style="list-style-type: none"> ● poznavanje spletnih tehnologij za razvoj zalednega dela spletne aplikacije, objektno relacijskih preslikav in razvoja RESTful API-jev ● sposobnost samostojnega razvoja modernih spletnih aplikacij
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Objectives and competencies:

<p><i>The instructional unit contributes to the development of the following general and subject-specific competencies:</i></p> <p><i>General competencies:</i></p> <ul style="list-style-type: none"> ● competence to carry out all phases in the development of web applications: planning, and development, ● ability to operate within a team during all phases of development of web solutions ● mastering procedures for ensuring the safe and stable functioning of the web applications, and the elimination of errors <p><i>Subject-specific competencies:</i></p> <ul style="list-style-type: none"> ● Knowledge of server-side web technologies, object-relational mapping, and developing RESTful APIs ● Capability of independent development of modern web application

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje:

Študent/študentka:

- razume različne tipe arhitektur modernih spletnih aplikacij ter njihove prednosti in slabosti
- pridobi operativno znanje aktualnih ogrodij za razvoj zalednega dela spletnih aplikacij
- je sposoben neodvisnega razvoja modernih spletnih aplikacij

Knowledge and understanding:

The student:

- understands various types of modern web application architectures, their advantages and disadvantages
- gains operative knowledge of a state-of-the-art web applications backend development framework
- is capable of independent development of modern web applications

Metode poučevanja in učenja:

- predavanja z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov)
- vaje, kjer bodo študentje na konkretnih problemih ponovili, utrdili in dodatno osvetlili pojme in metode, spoznane na predavanjih
- seminarska naloga bo študente naučila samostojnega reševanja praktičnih problemov z uporabo standardnih podatkovnih struktur in algoritmov

Learning and teaching methods:

- lectures with active student participation (explanation, discussion, questions, examples, problem-solving)
- lab work, during which the students will use practical problems to repeat and strengthen the topics and methods presented at the lectures
- student project will prepare the students to autonomously solve practical problems in modern web application backend development

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):

- Ustni izpit
- Projektna naloga

Delež (v %) /

Weight (in %) /

Assessment:

Type (examination, oral, coursework, project):

- Oral exam
- Project assignment

Reference nosilca / Lecturer's references:

- Fodor, L., Jakovetić, D., Boberić Krstičev, 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)

- Zarko Bodroski, Nenad Vukmirovic, Srdjan Skrbic: Gaussian basis implementation of the charge patching method. *Journal of Computational Physics*, Volume 368, 2018, Pages 196-209
- Vladimir Loncar, Luis E. Young-S., Srdjan Skrbic, Paulsamy Muruganandam, Sadhan K. Adhikari, Antun Balaz: OpenMP, OpenMP/MPI, and CUDA/MPI C programs for solving the time-dependent dipolar Gross-Pitaevskii equation. *Computer Physics Communications* 209: 190-196 (2016)
- Loncar Vladimir, Balaz Antun, Bogojevic Aleksandar, Skrbic Srdjan, Muruganandam Paulsamy, Adhikari Sadhan: CUDA programs for solving the time-dependent dipolar Gross-Pitaevskii equation in an anisotropic trap, *Computer Physics Communications*, No. 200, pp. 406-410, 2016.
- Loncar Vladimir, Skrbic Srdjan, Balaz Antun: Parallelization of Minimum Spanning Tree Algorithms Using Distributed Memory Architectures, *Transactions on Engineering Technologies*, pp. 543-554, 2014.
- Loncar Vladimir, Skrbic Srdjan, Balaz Antun: Distributed Memory Parallel Algorithms for Minimum Spanning Trees, *Proceedings of the World Congress on Engineering 2013*, Vol II, pp. 1271-1275, 2013.
- Panic Goran, Rackovic Milos, Skrbic Srdjan: Fuzzy XML and prioritized fuzzy XQuery with implementation, *Journal of Intelligent and Fuzzy Systems*, Vol. 26, No. 1, pp. 303-316, 2014.
- Skrbic Srdjan, Rackovic Milos, Takaci Aleksandar: Prioritized fuzzy logic based information processing in relational databases, *Knowledge-based Systems*, Vol. 38, pp. 62-73, 2013.
- Skrbic Srdjan, Rackovic Milos, Takaci Aleksandar: Towards the Methodology for Development of Fuzzy Relational Database Applications, *Computer Science and Information Systems*, Vol 8, No 1, pp. 27-40, 2011.