UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Razvoj naprednih spletnih uporabniških vmesnikov
Course title:	Advanced web user interface development

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Računalništvo in spletne tehnologije, druga stopnja	-	Prvi	Drugi
Computer Science and Web Technologies, second cycle	-	First	Second

Vrsta predmeta / Course type	Obvezni / Obligatory
Univerzitetna koda predmeta / University course code:	2-RST-MAG-RNSUV-2024-02-05

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorials**	**Klinične vaje** **work**	**Druge oblike študija**	**Samost. delo** **Individ. work**	**ECTS**
30	-	30	-	-	105	5

Nosilec predmeta / Lecturer:	prof. dr. Srđan Škrbić

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenski, angleški / Slovene, English
	Vaje / Tutorials:	Slovenski, angleški / Slovene, English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Pogoj za vključitev v delo je osnovno znanje programiranja in osnov HTML. Pogoj za pristop k izpitu so opravljene vse obveznosti na vajah ter priprava in zagovor projektne naloge.	Basic knowledge of programming and HTML is required. Before examination, a student must pass the requirements given during laboratory work and prepare and defend a project.

Vsebina:	**Content (syllabus outline):**
• Ponovitev osnov CSS, HTML 5 in javascript-a. • Osnovni koncepti uporabniških vmesnikov. Pregled modernih arhitektur razvoja spletnih uporabniških vmesnikov. Večstranske in enostranske aplikacije. • Odzivnost in prilagajanje različnim brskalnikom in velikostim prikazov. • Uvod v delo z BootStrap-om. • JavaScript ogrodja. ECMAScript in TypeScript.	• Basics of CSS, HTML 5 and JavaScript – review. • Basic concepts of web user interfaces. Overview of modern architectures for web user interface development. Multi-page and single-page applications. • Responsiveness and adjustment to various browsers and displays. • Introduction to BootStrap. • JavaScript frameworks. ECMAScript and TypeScript.

• Študija primera: Razvoj enostranske spletne aplikacije z uporabe naslednjih elementov ogrodja Angular: o komponente in direktive, o obrazci, o storitve in HTTP klici, o Usmerjanje.	• Case study: Development of a single-page web application using the following elements of Angular framework: ◦ Components and directives ◦ Forms ◦ Services and HTTP calls ◦ Routing.

Temeljni literatura in viri / Readings:

Literatura in viri se zaradi nenehnega razvoja posodabljajo v vsakem študijskem letu. / Readings will be updated annually.

- Bampakos, A. , Deeleman, P., Learning Angular, 4th edition, Packt publishing, 2023.
- Seshadri, S. (2018). Angular Up and Running. O'Reilly Media.
- Goldberg, J. (2022). Learning Typescript. O'Reilly Media.
- Bampakos, A. (2021). Angular Projects, 2nd ed. Packt Publishing.
- Uluca, D., Angular for Enterprise Ready Web Applications, 2nd edition, Packt publishing 2020.
- Fulton, S., Fulton J. (2013). *HTML5 Canvas*, 2nd ed. O'Reilly Media.
- Bootstrap Documentation, Spletni vir, povezava: https://getbootstrap.com/docs
- Angular, Spletni vir, povezava: https://angular.io/

Cilji in kompetence:

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

Splošne kompetence:

- Sposobnost prepoznavanja priložnosti za inoviranje in zasnovo novih spletnih storitev in aplikacij.
- Zmožnost za prepoznavanje in izkoriščanje priložnosti, ki jih ponuja spletna tehnologija.
- Usposobljenost za skupinsko delo v vseh fazah razvoja in raziskovanja programskih (spletnih in mobilnih) rešitev.

Predmetno-specifične kompetence:

- Usposobljenost za načrtovanje in razvoj odzivnih uporabniških vmesnikov spletnih (in mobilnih) aplikacij.
- Sposobnost primerjave in izbire primernih orodij in ogrodij za razvoj naprednih uporabniških vmesnikov spletnih aplikacij.

Objectives and competences:

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

General competences:

- Ability to recognize the opportunity to innovate and design new online services and applications.
- Ability to recognize and seize opportunities offered by the web technology.
- Ability to work in team at all stages of development and research of software (web and mobile) solutions.

Subject-specific competences:

- Ability to plan and develop responsive user interfaces of web (and mobile) applications;
- Ability to compare and select appropriate tools and frameworks to develop advanced user interfaces of web applications;
- Advanced knowledge and understanding of basic elements

• Napredno poznavanje in razumevanje konceptov osnovnih elementov (CSS, HTML5, JavaScript) spletnih aplikacij.	concepts (CSS, HTML5, JavaScript) of web applications.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: • študent se seznani s teoretičnimi osnovami in s praktičnimi vidiki razvoja uporabniških vmesnikov spletnih aplikacij; • študent se nauči uporabljati vsaj eno od najaktualnejših ogrodij za razvoj spletnih aplikacij. • bistveno nadgradi znanje CSS, HTML in javascript. Prenesljive/ključne spretnosti in drugi atributi: • pridobljeno znanje se lahko uporabi pri ostalih problemih, ki zahtevajo rešitve v obliki programiranja.	Knowledge and understanding: • a student learns theoretical basics and practical aspects of user interface development; • a student learns to use at least one of the state-of-the-art frameworks for development of web applications; • significantly upgrades the knowledge of CSS, HTML, and JavaScript. Transferable/key skills and other attributes: • transfer of knowledge to other areas where common programming knowledge is used.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• predavanja z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri); • laboratorijske vaje.	• lectures with active student participation (explanation, discussion, questions, examples); • laboratory work.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
• projektna naloga z ustnim zagovorom	100 %	• project work with oral defense

Reference nosilca / Lecturer's references:

- 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)
- 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.
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