| | UČNI NAČRT PREDMETA/COURSE SYLLABUS |
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| **Predmet** | **Izdelava spletnih aplikacij** |
| **Course title** | **Web Application Development** |

| **Študijski program in stopnja**<br>**Study programme and level** | **Študijska smer**<br>**Study field** | **Letnik**<br>**Academic year** | **Semester**<br>**Semester** |
|---|---|---|---|
| Upravljanje poslovnih in informacijskih sistemov / 2. stopnja | Upravljanje in razvoj informacijskih sistemov | 1. letnik | 2. |
| Business and Information Systems Management / 2nd Cycle | Management and Development of Information Systems | 1st year | 2nd |

| **Vrsta predmeta/Course type** | obvezni/obligatory |
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| **Univerzitetna koda predmeta/University course code** | 2_URIS_1_UN6 |
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| **Predavanja**<br>**Lectures** | **Seminar**<br>**Seminar** | **Sem. vaje**<br>**Tutorial** | **Lab. vaje**<br>**Laboratory work** | **Teren. vaje**<br>**Field work** | **Samost. delo**<br>**Individ. work** | **ECTS** |
|---|---|---|---|---|---|---|
| 20 | | | 10 | | 210 | 8 |

| **Nosilec predmeta/Lecturer:** | doc. dr. Sebastian Lahajnar |
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| **Jeziki/ Languages:** | **Predavanja/Lectures:** | slovenski/Slovenian |
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| | **Vaje/Tutorial:** | slovenski/Slovenian |

| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | **Prerequisites:** |
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| • Vpis v prvi letnik študijskega programa.<br>• Študent mora pred izpitom pripraviti in predstaviti ter zagovarjati projektno/raziskovalno nalogo. | • The prerequisite for inclusion is enrolment in the first year of study.<br>• Student has to prepare, present and defend a project/research paper before the exam. |

| **Vsebina:** | **Content (Syllabus outline):** |
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| • *Uvod*: Opredelitev pojma spletne aplikacije, zgodovinski razvoj spletnih programskih jezikov in tehnologij, klasifikacija po različnih kriterijih.<br>• *Tehnologije za razvoj spletnih aplikacij na strani odjemalca:* HTML5, slogi CSS, JavaScript, AJAX.<br>• *Tehnologije za razvoj spletnih aplikacij na strani strežnika*: CGI, PHP, ASP.NET, Java Servlets in JSP. | • *Introduction*: Definition of the concept of web application, historical development of web programming languages and technologies, classification by different criteria.<br>• *Web application development technologies on the client side*: HTML5, CSS styles, JavaScript, AJAX. |

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| • *Arhitekture:* Razvoj arhitektur skozi čas, večslojna arhitektura, MVC (Model–view–controller), lahki in debeli odjemalec.<br>• *Porazdeljeni sistemi:* Izgradnja in uporaba spletnih storitev SOAP (Simple Object Access Protocol) in REST (Representational State Transfer).<br>• *Izgradnja spletnih strani s HTML:* Strukturiranje vsebine, izdelava povezav, tabel in seznamov, delo z vsebniki, izgradnja obrazcev, vključevanje multimedije, izdelava postavitve spletnih strani.<br>• *Oblikovanje s CSS (Cascading Style Sheets):* Obravnava pravil CSS, vključevanje v dokument HTML, oblikovanje ozadja, besedila, povezav, seznamov, obrob, tabel. načini pozicioniranja.<br>• *Programiranje z JavaScriptom*: Sintaksa jezika, spremenljivke in operatorji, izdelava funkcij in prestrezanje dogodkov, delo z nizi, vejanje programske kode z odločitvami, ponavljanje z uporabo zank, delo s polji, preverjanje obrazcev HTML, delo z JavaScript BOM in *JavaScript DOM* objektnima modeloma, uporaba tehnologije AJAX.<br>• *PHP:* Sintaksa jezika, spremenljivke in operaterji, pogojno izvajanje, zanke, uporaba funkcij, delo s polji, izdelava piškotkov, vzdrževanje seje, prevzem in preverjanje podatkov, nalaganje datotek na strežnik, osnovni principi objektnega programiranja, dostop do relacijskih podatkovnih baz.<br>• *Osnove jezika XML*: Definicija, zgradba dokumenta XML, preverjanje veljavnosti z uporabo DTD in XMLScheme, XPath, XLINK, XPointer, XSLT.<br>• *Načrtovanje spletnih aplikacij: P*ristop spletnega inženiringa, temeljni razvojni cikel izgradnje spletnih aplikacij, uporaba metodologij WebML, UWE in WAE. | • *Web application development technologies on the server side*: CGI, PHP, ASP.NET, Java Servlets and JSP.<br>• *Architecture*: Development of architectures over time, multilayer architecture, MVC (Model-view-controller), thin and thick client.<br>• *Distributed Systems*: Building and using SOAP (Simple Object Access Protocol) and REST (Representational State Transfer).<br>• *Building web pages with HTML*: Structuring content, creating links, tables and lists, working with containers, building forms, integrating multimedia, creating website layout.<br>• *Cascading Style Sheets*: CSS rules definition, embedding CSS in the HTML document, formatting background, text, links, lists, borders and tables, different ways of positioning.<br>• *JavaScript programming*: Language syntax, variables and operators, function programming and events handling, working with strings, decisions statements, repeating code using loops, working with arrays, HTML forms validation, working with JavaScript BOM and JavaScript DOM object models, usage of AJAX technology.<br>• *PHP*: Language syntax, variables and operators, conditional statements, loops, use of functions, working with arrays, cookie creation, session maintenance, data verification, uploading files to the server, basic principles of PHP object programming, accessing relational databases.<br>• *XML language basics*: Definition, XML document structure, validation using DTD and XMLScheme, XPath, XLINK, XPointer, XSLT.<br>• *Web application design*: Web engineering approach, basic web application development cycle, use of WebML, UWE and WAE methodologies. |

**Temeljna literatura in viri/Readings:**

**Temeljna literatura/Basic literature**

- Dean, J. (2018). *Web Programming with HTML5, CSS, and JavaScript.* Jones & Bartlett Learning.
- Ajzele, B. (2017). *Mastering PHP 7: Design, configure, build, and test professional web applications*. Packt Publishing.
- Rossi., G., idr. (2007) *Web Engineering: Modelling and Implementing Web Applications*. Springer.

**Priporočljiva literatura/Recommended literature**

- Ullman, L. (2017). *PHP and MySQL for Dynamic Web Sites, 5th Edition*. Peachpit Press.
- Ruvalcaba. Z., Delamater, M. (2017). *Murach's JavaScript and jQuery, 3rd Edition*. Mike Murach & Associates.

| **Cilji in kompetence:** | **Objectives and competences:** |
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| *Učna enota prispeva predvsem k razvoju naslednjih splošnih in specifičnih kompetenc:*<br>• usposobljenost za poglobljeno razumevanje najsodobnejših področij računalništva in informatike,<br>• usposobljenost za uporabo pridobljenih znanj za samostojno reševanju strokovnih in znanstvenih problemov računalništva in informatike,<br>• usposobljenost za samostojno in timsko raziskovalno in razvojno delo, za uporabo znanstvenih pristopov pri delu in za obvladanje sodobnih razvojnih postopkov na področju računalništva in informatike,<br>• razvoj komunikacijskih sposobnosti in sposobnosti poročanja o razvojno - raziskovalnem delu,<br>• usposobljenost sodelovanja, dela v skupini in dela na projektih,<br>• razumevanje temeljnih in razvojno raziskovalnih znanj računalništva in informatike, ter obvladovanje zahtevnejših veščin obeh področij,<br>• usposobljenost za aplikacijo klasičnih ter razvijanje novih konceptov in znanj računalništva in informatike,<br>• razumeti in razvijati zakonitosti delovanja informacijskih sistemov,<br>• poznavanje in modeliranje sodobnih tehnik zbiranja, pretvorbe, prenašanja in shranjevanja podatkov in informacij,<br>• obvladovanje zahtevnejših metod zasnove informacijskih sistemov. | *The learning unit mainly contributes to the development of the following general and specific competences:*<br>• being qualified for in-depth understanding of the most contemporary areas of computer science and informatics,<br>• the ability to use the acquired knowledge to independently solve professional and scientific problems in computer science and informatics,<br>• being qualified for independent and team research and development work, for the use of scientific approaches at work, and for mastering contemporary development procedures in the field of computer science and informatics,<br>• development of communication skills and the ability to report about research and development work,<br>• being qualified for cooperation, group work and work on projects,<br>• understanding basic and developmental research knowledge of computer science and informatics, and mastering more demanding skills of both fields,<br>• being qualified for the application of classic and the development of new concepts and knowledge of computer science and informatics,<br>• understanding and developing the laws of the information systems operation, |

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| | • knowing and modelling modern techniques for collecting, converting, transferring and storing data and information,<br>• managing more complex methods of information systems designing. |

| Predvideni študijski rezultati: | Intended learning outcomes: |
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| *Študent/študentka:*<br>• se usposobi za načrtovanje in razvoj kompleksnejših spletnih aplikacij na strani odjemalca in strežnika,<br>• pozna in razume osnove tehnologij in arhitektur za izdelavo porazdeljenih spletnih sistemov,<br>• pozna ključne arhitekturne pristope za izgradnjo in dostop do spletnih storitev,<br>• pozna in uporablja jezike HTML, CSS in JavaScript,<br>• pozna in uporablja tehnologijo AJAX za komunikacijo s spletnim strežnikom,<br>• pozna in uporablja programski jezik PHP za reševanje zahtevnejših programskih problemov in za dostop do relacijskih podatkovnih baz,<br>• pozna in razume pomen in vlogo jezika XML ter uporablja njegove koncepte,<br>• pozna in razume različne metodološke pristope k načrtovanju in razvoju spletnih aplikacij. | *Students:*<br>• become qualified for the design and development of complex Web applications on the client and server side,<br>• know and understand the basics of technologies and architectures for distributed Web systems development,<br>• are familiar with key architectural approaches for building and accessing web services,<br>• know and use the HTML, CSS and JavaScript languages,<br>• know and use AJAX technology to communicate with the web server,<br>• know and use the PHP programming language to solve more complex software problems and to access relational databases,<br>• know and understand the meaning and role of the XML language and use its concepts,<br>• know and understand different methodological approaches to web applications design and development. |

| Metode poučevanja in učenja: | Learning and teaching methods: |
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| • *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov),<br>• *laboratorijske vaje:* refleksija izkušenj, praktično reševanje več tipičnih problemov na računalniku, predstavitev in zagovor programskih rešitev, diskusija, sporočanje povratne informacije. | • *lectures* with active student participation (explanation, discussion, questions, examples, problem solving),<br>• *laboratory work:* reflection on experience, practical solving of several typical problems on a computer, presentation and defence of programming solutions, discussion, feedback. |

| Načini ocenjevanja: | Delež (v %) Weight (in %) | Assessment: |
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| Načini:<br>• izpit<br>• izdelava, predstavitev in zagovor projektne/raziskovalne naloge<br><br>Ocenjevalna lestvica: ECTS. | 60 %<br>40 % | Types:<br>• exam<br>• preparation, presentation and defence of the project/research paper<br><br>Grading scheme: ECTS. |