UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Interaktivne 3D-vsebine za svetovni splet
Course title:	Interactive 3D Environments on Internet

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj		4.	7
Five-year master's degree program Subject Teacher		4.	7

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30		2	28		90	5

Nosilec predmeta / Lecturer:	Matjaž Debevc

Jeziki /	**Predavanja / Lectures:**	slovenski / Slovene
Languages:	**Vaje / Tutorial:**	slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Pogojev ni.	None.

Vsebina:	**Content (Syllabus outline):**
• Uvod: spoznavanje temeljnih konceptov za raziskovanje multimedijskih vsebin, razlike med obogateno, virtualno in mešano resničnostjo. Pregled aplikacij za njihovo uporabo v praksi. • Priprava multimedijskih vsebin za svetovni splet: kombiniranje in prepletanje interaktivnih avdio vizualnih vsebin. • VRML/X3D - Virtual Reality Modelling Language / eXtensible 3D Language.	• Introduction: Learning fundamental concepts for exploring multimedia content, the difference between augmented, virtual and mixed reality. Overview of existing applications for their usage and development. • Preparation of multimedia content for web applications: combining and relating interactive audio-visual content.

• Načrtovanje in raziskovanje produkcijskih faz 360° videa v povezavi z virtualno resničnostjo. • Fotogrametrija in ustvarjanje 3D modelov. • Interaktivna programska okolja za vključevanje občinstva pri predstavitvah. • Kvalitativno in kvantitativno ovrednotenje multimedijskih vsebin na spletu.	• VRML/ X3D – Virtual Reality Modelling Language /eXtensible 3D Language. • Exploring production phases of 360° video related to virtual reality. • Photogrammetry and creating 3D models. • Interactive presentation software to engage the audience. • Qualitative and quantitative evaluation of web multimedia content.

Temeljni literatura in viri / Readings:

- G. Klajnšek in B. Žalik: Standard VRML, Univerza v Mariboru, Fakulteta za elektrotehniko, računalništvo in informatiko, Maribor, 2002.
- D. Brutzman in L. Daly: X3D: Extensible 3D Graphics for Web Authors, Morgan Kaufman/Elsevier, San Francisco, 2007.
- Zachary, B. H. Virtual Reality : Advances in Research and Applications, Hauppauge, New York, 2016.
- R. Hughes, Augmented Reality : Developments, Technologies and Applications, Nova publishers, New York, 2014.
- Wohl, M. The 360° Video Handbook: A step-by step guide to creating video for virtual reality, 2017.

Cilji in kompetence:	**Objectives and competences:**
Cilj tega predmeta je naučiti študente pripraviti in uporabiti interaktivne multimedijske vsebine na svetovnem spletu in jih ustrezno ovrednotiti.	The objective of this course is to acquaint students with preparation and use of interactive web multimedia content and evaluate them appropriately.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Po zaključku tega predmeta bo študent sposoben • oblikovati sodobne načrte interaktivnih multimedijskih vsebin na spletu, • načrtovati, uporabiti in ovrednotiti interaktivne multimedijske navidezne svetove, • izdelati in ovrednotiti aplikacije za virtualno, obogateno in mešano resničnost, • s sintezo znanja izbrati ustreznejše multimedijske vsebine za svetovni splet. Prenosljive/ključne spretnosti in drugi atributi: • Spretnosti komuniciranja: pisno izražanje pri pisnem izpitu in individualnih esejih, ustno izražanje pri sodelovanju na vajah. • Uporaba informacijske tehnologije: uporaba naprednih orodij za izdelavo interaktivnih multimedijskih navideznih svetov. • Reševanje problemov: načrtovanje in izdelava samostojnega produkta v projektu.	Knowledge and understanding: On completion of this course the student will be able to • develop actual plans for interactive web multimedia content, • design, use and evaluate interactive web multimedia virtual environments, • develop virtual, augmented and mixed reality applications, • with synthesis of knowledge to select appropriate web multimedia content. Transferable/Key skills and other attributes: • Communication skills: manner of expression at written examination and individual essays, oral manner of expression during seminars. • Use of information technology: use of advanced tools for development of interactive multimedia virtual worlds. • Problem solving: design and development of an individual product in the project.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• predavanja, • seminarske vaje, • laboratorijske vaje, • projekt.	• lectures, • tutorial, • lab work, • project.

Načini ocenjevanja:	**Delež (v %) /** **Weight (in %)**	**Assessment:**
• laboratorijske vaje, • opravljen projekt, • pisni/ustni izpit.	35 % 15 % 50 %	• lab work, • completed project, • written/oral examination.

Reference nosilca / Lecturer's references:

- DEBEVC, Matjaž, WEISS, Jernej, ŠORGO, Andrej, KOŽUH, Ines. Solfeggio learning and the influence of a mobile application based on visual, auditory and tactile modalities. British journal of educational technology, ISSN 1467-8535. [Online ed.], First published: 18 April 2019, str. 1-17, ilustr., doi: 10.1111/bjet.12792.
- KOŽUH, Ines, KRAJNC, Radovan, HADJILEONTIADIS, Leontios J., DEBEVC, Matjaž. Assessment of problem solving ability in novice programmers. PloS one, ISSN 1932-6203, Published: September 12, 2018, str. 1-21, doi: 10.1371/journal.pone.0201919.
- KOŽUH, Ines, HINTERMAIR, Manfred, DEBEVC, Matjaž. Community building among deaf and hard of hearing people by using written language on social networking sites. Computers in human behavior, ISSN 0747-5632. [Print ed.], Dec. 2016, vol. 65, str. 295-307, doi: 10.1016/j.chb.2016.08.035.
- DEBEVC, Matjaž, MILOŠEVIĆ, Danijela, KOŽUH, Ines. A comparison of comprehension processes in sign language interpreter videos with or without captions. PloS one, ISSN 1932-6203, Published: May 26 2015, , iss. , str. 1-10, doi: 10.1371/journal.pone.0127577.
- DEBEVC, Matjaž, KOŽUH, Ines, HAUPTMAN, Simon, KLEMBAS, Andrej, LAPUH BELE, Julija, HOLZINGER, Andreas. Using WCAG 2.0 and heuristic evaluation to evaluate accessibility in educational web-based pages. V: UDEN, Lorna (ur.), LIBERONA, Dario (ur.), WELZER-DRUŽOVEC, Tatjana (ur.). Learning technology for education in cloud : 4th International Workshop, LTEC 2015, Maribor, Slovenia, August 24-28, 2015 : proceedings, (Communications in computer and information science (Internet), ISSN 1865-0937, 533). Cham: Springer. cop. 2015, vol. 533, str. 197-207, doi: 10.1007/978-3-319-22629-3_16