Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Multimedijske vsebine za svetovni splet
Course title:	Web Multimedia Content

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Izobraževalno računalništvo 2. stopnja		1.	poletni
Educational computer science 2nd level		1.	Spring

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

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

Nosilec predmeta / Lecturer: Matjaž Debevc

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

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

Vsebina:

Content (Syllabus outline):

- Uvod: Spoznavanje temeljenjih konceptov za raziskovanje multimedijskih vsebin, razlike med obogateno, virtualno in mešano resničnostjo. Pregled aplikacij za njihovo uporabo in izdelavo v praksi.
- Priprava multimedijskih vsebin za svetovni splet: kombiniranje in prepletanje interaktivnih avdio vizualnih vsebin.
- VRML/X3D – Virtual Reality Modelling Laguage / eXtensible 3D Language.
- 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.

- Introduction: Learning fundamental concepts for exploring multimedia content, the difference between augmented, virtual and reality. Overview of existing applications for their usage and development.
- Preparation of multimedia content for web applications: combining and relating interactive audio-visual content.
- 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:

Cilj tega predmeta je naučiti študente pripraviti in uporabiti interaktivne multimedijske vsebine na svetovnem spletu in jih ustrezno ovrednotiti.

Objectives and competences:

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:

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.

Intended learning outcomes:

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,

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 svetovov. Reševanje problemov: načrtovanje in izdelava samostojnega produkta v projektu.	• 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, • laboratorijske vaje, • projekt.	• lectures, • 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, 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, vol. , iss. , str. 1-10, doi: 10.1371/journal.pone.0127577.
- DEBEVC, Matjaž, STJEPANOVIĆ, Zoran, HOLZINGER, Andreas. Development and evaluation of an e-learning course for deaf and hard of hearing based on the advanced Adapted Pedagogical Index method. Interactive learning environments, vol. 22, iss. 1, str. 35-50
- 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