

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Interakcija človek-računalnik II
Course title:	Human-Computer Interaction II

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 3. stopnja	Tehnologije znanja	1	1
Information and Communication Technologies, 3 rd cycle	Knowledge Technologies	1	1

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code: IKT3-701

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Druge oblike	Samost. delo Individ. work	ECTS
15	15			15	105	5

**Navedena porazdelitev ur velja, če je vpisanih vsaj 15 študentov. Drugače se obseg izvedbe kontaktnih ur sorazmerno zmanjša in prenese v samostojno delo. / This distribution of hours is valid if at least 15 students are enrolled. Otherwise the contact hours are linearly reduced and transferred to individual work.*

Nosilec predmeta / Lecturer: Prof. dr. Franc Novak

Jeziki / Predavanja / Lectures: Slovenščina, angleščina / Slovenian, English
Languages: Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Zaključen študij druge stopnje s področja informacijskih ali komunikacijskih tehnologij ali zaključen študij druge stopnje na drugih področjih z znanjem osnov s področja predmeta. Potrebna so tudi osnovna znanja matematike, računalništva in informatike.

Prerequisites:

Completed second cycle studies in information or communication technologies or completed second cycle studies in other fields with knowledge of fundamentals in the field of this course. Basic knowledge of mathematics, computer science and informatics is also requested.

Vsebina:

Vrste interakcij:
pregled tradicionalnih vrst interakcij, trendi v smeri naravnih uporabniških vmesnikov
Lastnosti zaznavanja zaslonov na dotik:
zaznani objekti, zaznana informacija, lastnosti zaslonov
Sistem osnovan na gestah:
lastnosti jezika gest, model jezika gest, osnovan na stanjih in prehodih med njimi
Vizualno zaznavanje:

Content (Syllabus outline):

Interaction styles:
overview of traditional interaction styles, current trends toward natural user interfaces
Taxonomy of touch screen sensing properties:
sensed objects, sensed information, display properties
Gesture system:
properties of a gesture language, mode and flow model of a gesture language
Visual perception:

lastnosti vizualnih spremenljivk, organizacija elementov zaslona, metodologija sledenja oči

Vizualizacija informacije:
 principi vizualne predstavitve, strukture informacij, predstavitvene strategije, navigacijske strategije, interakcijske strategije

Taksonomije kakovosti v interakciji človek-računalnik:
 kakovost storitve, kakovost izvedbe

Testiranje uporabnosti:
 cilji testiranja uporabnosti, raziskovalna študija, ocenjevalni test, verifikacijski test, uporabnostno testiranje v specifičnih domenah

characteristics of visual variables, organization of screen elements, eye-tracking methodology

Information visualization:
 principles of visual representation, information structures, presentation strategies, navigation strategies, interaction strategies

Taxonomies of quality of multimodal human-computer interaction:
 quality of service, quality of experience

Usability testing:
 goals of usability testing, exploratory study, assessment test, verification test, usability testing in specific domains

Temeljna literatura in viri / Readings:

Izbrana poglavja iz naslednjih knjig: / Selected chapters from the following books:

- T. Schlatte, and D. Levinson. *Visual Usability. Principles and Practices for Designing Digital Applications*. Morgan Kaufmann, 2013. ISBN 978-0-12-398536-1
- D. Wigdor, and D. Wixon. *Brave NUI World. Designing Natural User Interfaces for Touch and Gesture*. Morgan Kaufmann, 2011. ISBN 978-0-12-382231-4
- G. Salvendy (ed.). *Handbook of Human Factors and Ergonomics*. Wiley, 2012, ISBN 978-0-470-52838-9
- G. A. Boy (ed.). *The Handbook of Human-Machine Interaction. A Human Centered Design Approach*. Ashgate Publishing Limited, 2011. ISBN 978-0-7546-7580-8

Cilji in kompetence:

Cilj predmeta je seznaniti študenta z glavnimi principi in novimi trendi s področja interakcija človek-računalnik.

Poleg splošnih kompetenc, kot so obvladanje strategij in raziskovalnih metod za reševanje problemov in odločanje, sposobnost uporabe znanja v praksi ter samostojno, odgovorno in kreativno izvajanje aktivnosti, bodo študenti, ki bodo opravili ta predmet, razumeli lastnosti vizualne percepcije in z njo povezane strategije in tehnike vizualizacije informacij. Pridobili bodo znanje o tradicionalnih načinih interakcije in spoznali principe snovanja naravnih uporabniških vmesnikov. Pridobili bodo tudi znanje in izkušnje za izvedbo uporabnostnega testiranja. Sposobni bodo tudi generirati kreativne rešitve interakcije na osnovi najnovejših tehnologij.

Objectives and competences:

The goal of the course is to acquaint the student with the main principles and novel trends of human-computer interaction.

Beside general competences, such as to adopt strategies and methods appropriate to problem solving and decision making, ability to apply theory in to practice and to carry out activities in an autonomous, responsible and creative manner, the students completing this course will gain understanding of visual perception and associated information visualization strategies and techniques. They will get the knowledge of traditional interaction styles and learn the principles of designing natural user interfaces. They will also get the knowledge and skills for performing usability testing. They will also achieve the ability to generate creative solutions for interactions based on the latest technologies.

Predvideni študijski rezultati:

Študenti bodo z uspešno opravljenimi obveznostmi tega predmeta pridobili:

- poznavanje osnovnih principov in tehnik vizualizacije informacij

Intended learning outcomes:

Students successfully completing this course will acquire:

- Knowledge of basic principles and techniques of information visualization

- pregled nad tradicionalnimi načini interakcije
- razumevanje konceptov in načrtovalskih tehnik snovanja naravnih uporabniških vmesnikov
- poznavanje taksonomije sistemov z zasloni na dotik in z njo povezane lastnosti jezika kretenj
- zmožnost snovanja uporabniških vmesnikov, izbire ustrezne hevristike za evalvacijo dane interakcije
- sposobnost učinkovitega sodelovanja pri tehnoloških rešitvah in razvojnih projektih, kjer je poudarek na interakciji človeka s kibernetскими sistemi
- sposobnost uporabe učinkovitih metod za zaznavo informacij

- Overview of traditional interaction styles
- Understanding of concepts and design techniques of natural user interfaces
- Knowledge of the taxonomy of touch screen systems and associated properties of gesture language
- Ability to develop user interfaces and to select proper usability heuristics for evaluation of given interaction
- Ability to efficiently cooperate at technological solutions and developmental projects, where the emphasis is on the human – cybersystem interaction
- Ability to apply effective methods for detection of information

Metode poučevanja in učenja:

Predavanja, seminar, konzultacije, individualno delo

Learning and teaching methods:

Lectures, seminar, consultancy, individual work

	Delež (v %) / Weight (in %)	Assessment:
Načini ocenjevanja:		
Seminarska naloga	50 %	Seminar work
Ustni zagovor seminarske naloge	50 %	Oral defense of seminar work

Reference nosilca / Lecturer's references:

- P. Novak, **F. Novak**, and B. Koroušić Seljak. "Enhancement of web application design of the open platform for clinical nutrition." *Lecture notes in computer science*, vol. 7946, pp. 791-802, 2013.
- M. Ristič, and **F. Novak**. "Towards the improvement of emergency call service." *International journal on information technology*, vol. 1, no. 6, pp. 339-345, 2013.
- A. Jerman Blažič, B. Jerman Blažič, and **F. Novak**. "Social software tools in vocational e-learning: an empirical exploratory study." *International review on computers and software*, vol. 5, no. 6, pp. 731-739, 2010.
- D. Špelič, **F. Novak**, and B. Žalik. "Educational support for computational geometry course – the Delaunay triangulation tester." *International Journal of Engineering Education*, vol. 25, no. 1, pp. 93-101, 2009.
- **F. Novak**, and A Biasizzo. "Academic network for microelectronic test education." *International Journal of Engineering Education*, vol. 23, no. 6, pp. 1245-1253, 2007.