

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

<b>Predmet:</b>	Interakcija človek-računalnik
<b>Course title:</b>	Human-Computer Interaction

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 2. stopnja	Računalniške strukture in sistemi	1	2
Information and Communication Technologies, 2 <sup>nd</sup> cycle	Computer Structures and Systems	1	2

**Vrsta predmeta / Course type** Izbirni / Elective

**Univerzitetna koda predmeta / University course code:** IKT2-696

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 študijski program prve stopnje s področja naravoslovja, tehnike ali računalništva.

**Prerequisites:**

Student must complete first-cycle study programmes in natural sciences, technical disciplines or computer science.

**Vsebina:**

Osnovne vrste interakcij: ukazna vrstica, izbira menujev, izpolnjevanje formularjev, neposredna manipulacija, razpoznavanje gest  
 Pomembne človeške lastnosti: zaznavanje, spomin, vizualna ostrina, hitrost branja, tipkanja, razumevanja avdio posnetkov  
 Izvajanje opravil: obdelava informacij, mentalni modeli, vodenje gibov, Fittsov zakon, kognitivna obremenitev, kinematična obremenitev  
 Razumevanje ciljne funkcije sistema: tehnike zbiranja informacij, razvoj konceptualnih

**Content (Syllabus outline):**

Basic interaction styles: command line, menu selection, form fill-in, direct manipulation, gesture recognition  
 Important human characteristics: perception, memory, visual acuity, speed of reading, typing, perception of audio recordings  
 Task performance: information processing, mental models, movement control, Fitts's law, cognitive load, kinematic load  
 Understanding the target system function: information collection techniques, developing conceptual models, requirements analysis,

modelov, analiza zahtev, specifikacije zahtev  
 Tehnike vizualne komunikacije: osnovne lastnosti vizualnih spremenljivk, organizacija elementov zaslona, vizualna struktura zaslona  
 Osnovni elementi uporabniškega vmesnika: kontrolni elementi, formularji, grafi, tabele, ikone, slike  
 Vizualna struktura in organizacija: grupiranje, hierarhija, sorodnost, uravnoteženost.  
 Razumevanje principov dobrega dizajna uporabniškega vmesnika: konsistenca, začetna točka, navigacija, vizualno prijetna kompozicija  
 Barve in tipografija  
 Snovanje prototipov uporabniškega vmesnika: osnovni principi, heuristična pravila  
 Testiranje uporabnosti: cilji testiranja uporabnosti, proces izvajanja uporabnostnega testa, analiza rezultatov, poročanje o odkritjih in priporočila

requirements specifications.  
 Visual communication techniques: characteristics of visual variables, organization of screen elements, visual structure of the screen  
 Basic elements of user interface: control elements, forms, graphs, tables, icons, pictures  
 Visual structure and: grouping, hierarchy, relationship, balance.  
 Understanding the principles of good interface design: consistency, starting point, navigation, visually pleasing composition  
 Colors and typography  
 User interface prototype design: basic principles, heuristic rules  
 Usability testing: goals of usability testing, process for conducting usability test, data analysis, reported findings and recommendations.

### 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 s področjem interakcije 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 osnovne koncepte snovanja uporabniških vmesnikov. Pridobili bodo znanje o učinkovitih metodologijah snovanja vmesnikov ter izkušnje za hitro izvedbo prototipov in uporabnostnega testiranja.

### Objectives and competences:

The goal of the course is to familiarize the student with the field 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 basic concepts of user interface design. They will get the knowledge of effective interface design methodologies and skills for rapid prototyping and usability testing.

### Predvideni študijski rezultati:

Študenti bodo z uspešno opravljenimi obveznostmi tega predmeta pridobili:

- razumevanje dejstev, ki jih je potrebno

### Intended learning outcomes:

Students successfully completing this course will acquire:

- Understanding of considerations that must be

upoštevati v procesu snovanja uporabniškega vmesnika in zaslona,

- znanje pravil učinkovite metodologije snovanja uporabniških vmesnikov,
- znanje snovanja in organizacije grafičnih zaslonov in spletnih strani, ki omogočajo hitro in jasno razumljivost in funkcionalnost,
- zmožnost ustrezne izbire barv zaslona in snovanja ikon in drugih elementov grafičnega zaslona,
- zmožnost izvajanja procesa načrtovanja uporabniškega vmesnika vključno z razvojem in testiranjem uporabnosti.

applied to the interface and screen design process

- Knowledge of the rules for an effective interface design methodology,
- Knowledge of the design and organization of graphical screens and Web pages with fast and accurate comprehension and execution of screen features,
- Ability to choose screen colors and design screen icons and graphics,
- Ability to perform the user interface design process, including interface development and testing.

**Metode poučevanja in učenja:**

Predavanja, seminar, konzultacije, individualno delo

**Learning and teaching methods:**

Lectures, seminar, consultancy, individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
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. Koroušič 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.