

Course title: INTERACTIVE SYSTEMS DEVELOPMENT

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| Lecturers | Full Prof. Božidar Kliček, Ph.D. Assoc. Prof. Dijana Plantak Vukovac, Ph. D. Full Prof. Valentina Kirinić, Ph.D. Matija Šajn, M. Inf. |
| Language of instruction | Croatian and English |
| Study level | Bachelor |
| Study programme | Information and Business Systems |
| Semester | 6 th (summer) |
| ECTS | 6 |
| Goal | Acquiring basic knowledge of human-computer interaction (HCI) and learning about the types and challenges of interactions encountered by the average user (or user with difficulty). Acquiring theoretical and practical knowledge of basic aspects related to usable design and user experience (UX), learning about the process of developing interactive systems, and applying various HCI methods of designing and developing interactive systems that are based on a user-oriented approach and user experience design. |
| General and specific learning outcomes | |
| Content | <p>1. 1. Human-Computer Interaction (HCI): About the Discipline and Basic Concepts</p> <p>The scope and interdisciplinarity of Human-Computer Interaction (HCI). Meaning of terms (usability, accessibility, user experience, interaction design, emotional design, etc.). Interactive system definition. The role of HCI in the process of developing interactive systems.</p> <p>2. Human Aspects of Interaction</p> <p>A physiological communication model of a human based on the taxonomy of the senses. Conceptual connection between media and senses. Cognitive aspects of human-computer interaction. Social aspects of interaction. Emotional aspects of interaction.</p> <p>3. Computer Aspects of Interaction</p> <p>Devices for direct manipulation. Devices for indirect manipulation. Fitts's Law and other principles. Display devices. Immersion devices. Other types of I / O devices.</p> <p>4. Types of Interactions and Interface Metaphors</p> <p>Basic types of human-computer interactions. Overview of user interfaces by the type of interaction. Multimedia elements in user interfaces.</p> <p>5. Interaction Design Principles and Guidelines</p> <p>General principles of interaction design. Specific principles and guidelines with regard to the type of interactions and achievement of a great user experience.</p> <p>6. Approaches to Interactive Systems Design</p> <p>User experience goals in the design of interactive systems. User-centered design. Participatory design. Agile approaches. Other approaches.</p> |

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| | <p>7. Design of Interactive Systems for Different Types of User</p> <p>Design for children. Design for elderly. Design for people with disabilities, and accessibility aspects of interactive systems. Design with respect to cultural differences.</p> <p>8. The Process of Developing Interactive Systems for a Great User Experience</p> <p>Overview of the development process to achieve great user experience: analysis (research and analysis of user needs), design (conceptual design, interaction design), implementation (prototyping), evaluation, development / performance. The project team in the process of developing interactive systems. Management of the development process.</p> <p>9. User Needs Analysis Methods</p> <p>The difference between user needs and functional requirements. Methods for identifying user needs: interviews, questionnaires, observation, focus groups, etc. Analysis of the context in which the user operates. Application of user needs analysis methods: user models, user flow, scenarios, storyboards, etc.</p> <p>10. Design Methods</p> <p>Synthesis of user needs and client requirements. Mental models of designers and users. Conceptual design methods: design thinking, personas, hierarchical task analysis, etc. Interaction design specifications.</p> <p>11. Prototyping Methods</p> <p>Methods for designing low-fidelity prototypes: sketches, wire models. Methods for designing high-fidelity prototypes: graphical models, interactive prototypes. Digital tools for prototyping low- and high-fidelity of prototypes.</p> <p>12. Methods for Evaluating Interactions and Interactive Systems</p> <p>Analytical evaluation methods: heuristic evaluation and other methods of assessment by HCI experts. User testing methods: thinking aloud, eye tracking, etc. User inquiring methods: usability evaluation questionnaires, user experience evaluation questionnaires.</p> <p>13. Integration of user experience design into interactive system development</p> <p>Agile software engineering methodologies from a UX perspective. Characteristics and application of Agile UX method. Characteristics and application of the Lean UX method. Other methods.</p> <p>14. The Future of Interactive Systems</p> <p>The social and legal impact of interactive systems. Multimodal interfaces and interaction. Predictions of key technologies developments and their impact on end-users.</p> |
| Exercises | Laboratory exercises follow the content of the lecture and enable practical application of various methods and tools in all stages of the development of interactive systems. The last exercise will be allocated for presentations of student projects. |
| Realization and examination | Students are required to attend 50% of the lectures and 80% of the laboratory exercises, and work on practical assignments during exercises. During the laboratory exercises, they should design and implement their own interactive system development project. During the semester, they are required to pass two written midterm examinations (or a written and oral exam if they do not pass a midterm). |

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| Related courses | |
| Literature | <p>Preece, J., Rogers, Y., Sharp, H. (2015) Interaction Design: beyond human-computer interaction, 4. izdanje, Wiley, USA</p> <p>Cooper, A., Reimann, R., Cronin, D., Noessel, C. (2014) About Face: The Essentials of Interaction Design, 4. izdanje, Wiley, USA</p> <p>Hartson, R., Pyla, P. (2012) The UX Book: Process and Guidelines for Ensuring a Quality User Experience, Morgan Kaufmann, Elsevier, USA</p> <p>The Encyclopedia of Human-Computer Interaction, 2nd Ed., Interaction Design Foundation (https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/)</p> |