

Module/Course Syllabus
Program: COMPUTER SCIENCE
 Full-time master's degree program

Course:	Barriers in the digital space
Type of the course:	obligatory/HES
Course code:	I2S1.04
Year:	I
Semester:	1
Form of the degree program:	full-time
Form of classes and number of hours per semester:	30
Lecture	30
Classes	0
Laboratory	0
Project	0
Number of ECTS credits:	2
Form of assessment:	course completion assessment
Course language:	English

Course objective (CO)	
CO1	To familiarize students with broad issues of accessibility for everyone in various spheres of life, in particular in digital accessibility.
CO2	To familiarize students with the problems of universal design of software interfaces, as well as with methods of testing their accessibility and usability.
CO3	To develop students' sensitivity to issues related to the barriers faced by people with disabilities.

Prerequisites in terms of knowledge, skills and other competencies	
1	Basic knowledge of software engineering.
2	Knowledge of web and mobile technology tools and the ability to use them.

Learning outcomes (LO)	
	In terms of knowledge:
LO 1	The student knows and understands the problem of limitations in digital resources in relation to various disabilities.
LO 2	The student has an in-depth knowledge of issues related to universal design and implementation of software interfaces, as well as the study of their accessibility and usability.
	In terms of social competence:
LO 3	The student is ready to undertake social activities, including activities to eliminate barriers faced by people with disabilities.

Course content	
Form of classes – lectures (L)	
	Course content
L1	The idea of universal design. People with limitations (including access to digital content and systems). Legal provisions. Basic concepts. Universal design principles.
L2	Ergonomics of software interfaces. Definitions and basic concepts. Types and examples. Interface concept.

L3	User profiles of digital systems, levels. Personae - definition, purpose, examples.
L4	Usability and accessibility of the software interface. Usability features. Disabilities affecting the accessibility of software interfaces: visual, hearing, motor, cognitive disorders. Assistive technologies.
L5	Practice of implementation of accessibility requirements in the EU and Poland. WCAG 2.1 guidelines. Rules and levels. Automatic verification.
L6	Testing the quality of software interfaces. Classification of methods and types. Quality assessment metrics. Quality assessment techniques. Organisation of the experiment. SUS methodology.
L7	Expert methods for assessing interface quality. Heuristics and checklists.
L8	Processing of experimental data. Annotations. Analyzes, priorities and development of solutions. Research report. Global utility measures (SUM).
L9	Introduction to eye tracking. The idea, the essence, devices and software. Equipment and organisation of the research stand.
L10	Designing an experiment and recording research participants. Preparation, analysis and visualisation of eye tracking data. Fixation paths and heat maps.
L11	Application of the eye tracking technique in interface quality research - examples.
L12	Introduction to UCD and UX concepts. Interface design. Software interface design methods: sketches, storyboards, mockups, formal methods, prototypes. CAID tools.

Didactic methods	
1	A lecture with a multimedia presentation.

Assessment methods and criteria		
Assessment method symbol	Assessment method description	Passing threshold
A1	Passing the lecture: written test.	51%

Required textbooks and other course materials	
1	Tullis T., Albert B.: Measuring the user experience: collecting, analyzing, and presenting usability metrics, Morgan Kaufmann Publishers, Elsevier, 2008.
2	Miłosz M.: Ergonomia systemów informatycznych, Politechnika Lubelska, Lublin, 2014.
3	Paszkiewicz D., Dębski J.: Dostępność serwisów internetowych. Dobre praktyki w projektowaniu serwisów internetowych dostępnych dla osób z różnymi rodzajami niepełnosprawności, Warszawa 2013. Stowarzyszenie Przyjaciół Integracji, https://www.power.gov.pl/media/13588/Dostepnosc-serwisow-internetowych-Dominik-Paszkiewicz-Jakub-Debski.pdf .
4	Ritter M., Winterbottom C.: UX w projektowaniu witryn internetowych (ebook), Helion, Gliwice, 2018.
Recommended textbooks and other course materials	
1	Miłosz M., Plechawska-Wójcik M., Borys M., Laskowski M.: Quality improvement of ERP system GUI using expert method: a case study. W: HSI 2013 - 6th International Conference on Human System Interaction, 6-8 June 2013, Sopot, Poland - 2013, pp. 145-152.
2	Borys M., Miłosz M.: Mobile application usability testing in quasi-real conditions a case study of a mobile eye tracker, 8th International Conference on Human System Interactions (HSI), Warsaw, Poland, Jun 25-27, 2015, s. 381-387.
3	Borys M., Miłosz M.: Mobile application usability testing in quasi-real conditions - the synergy of using different methods, 11th International Conference on Human System Interaction (HSI) - 2018.- 2018, s. 362-368.

4	Miłosz M., Chmielewska M.: Usability Testing of e-Government Online Services Using Different Methods – a Case Study, 13th International Conference on Human System Interaction HSI 2020, 2020, s. 1-5.
5	Dzieńkowski M., Miłosz M., Montusiewicz J.: Analysis and improvement of a natural user interface of the computerized board game “Architectural jewels of Lublin”, ICERI2018 Proceedings, 2018, s. 9153-9160.
6	Tuszyńska-Bogucka W., Borys M., Dzieńkowski M., Kwiatkowski B., Kocki W., Pełka J., Bogucki J.: Use of eye tracking for designing of learning spaces, ICERI2018 Proceedings, 2018, s. 5360-5368.
7	Tuszyńska-Bogucka W., Kwiatkowski B., Chmielewska M., Dzieńkowski M., Kocki W., Pełka J., Przesmycka N., Bogucki J., Galkowski D.: The effects of interior design on wellness – Eye tracking analysis in determining emotional experience of architectural space. A survey on a group of volunteers from the Lublin Region, Eastern Poland, Annals of Agricultural and Environmental Medicine, 2020, s. 113-122.

Student workload	
Form of activity	Average number of hours to complete the activity
Contact hours with the lecturer, including:	30
<i>participation in lectures</i>	30
Student's own work, including:	20
<i>preparation for the exam</i>	10
<i>self-study - analysis of case studies</i>	10
Total student workload	50
Total number of ECTS credits	2

Learning outcomes matrix					
Learning outcome	Reference to learning outcomes defined for the master's program	Course objectives	Course content	Didactic methods	Assessment methods
LO 1	I2A_W05 +++ I2A_W07 ++ I2A_W13 ++ I2A_W14 ++ I2A_W17 +++	CO1	L1, L2, L4, L5	1	A1
LO 2	I2A_W02 +++ I2A_W03 ++ I2A_W07 +++ I2A_W14 ++	CO2	L3, L6-L12	1	A1
LO 3	I2A_K01 +++ I2A_K03 ++ I2A_K06 +	CO3	L1, L4	1	A1

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