Bialystok University of Technology									
Field of study	**Computer Science**							**Degree level and programme type**	**Engineer's degree full-time programme**
Specialization/ diploma path	**---**							**Study profile**	academic
Course name	**Human-Computer Interaction**							**Course code**	**FCS-00038**
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	**Semester**	3
	30				15			**No. of ECTS credits**	**6**
Entry requirements	Object Oriented Programming (FCS-00012),								
Course objectives	To familiarize with the general principles of designing human-computer interfaces (graphics, audio, and custom). Discussion of the philosophical foundations and historical creation of interfaces - from the first computers and punch cards, the origins and development of graphical user interfaces, audio interfaces with speech recognition and generation, and the latest trends, such as, among others, Touch interfaces.								
Course content	Lecture: 1. Principles of designing human-computer interfaces, rules of the UX Design. 2. Review of the development of human-computer interfaces in the historical context. 3. Discussion of text interfaces (LCD screens, text consoles). 4. Discussion of sound interfaces, the basics of psychoacoustics, processing, synthesis and speech recognition. 5. Discussion of graphic user interfaces. 6. Elements of 2D and 3D graphics, principles of GUI creation in window applications. 7. Review of non-traditional interfaces (touch, intercepting gestures and movement, brain). 8. Virtual reality interfaces. Classes: 1. Analysis of text interfaces on the basis of examples of ready-made applications. 2. Project preparation and application implementation using the text-mode interface. 3. Adaptation of the project according to the Model View Controller scheme enabling the exchange of the human-computer communication interface. 4. Preparation of the project and implementation of the application with the use of the graphical mode interface (GUI). 5. Wireframes of an advanced multi-window application, data flow diagram.								
Teaching methods	lecture problem, programming, project method,								
Assessment method	Lecture - exam Laboratory - exercise reports								

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	knows the methods of human-computer communication and advanced user interfaces. know the elementary methods of data acquisition and signal processing for the purpose of user interaction with the computer	K_W10 K_W11
LO2	can design and select user interfaces, particularly graphical (GUI) and voice response (IVR)	K_W10 K_W11 K_U10
LO3	can select user interface technique for applications and selected and used technologies suitable for the implementation of this interface	K_W04 K_W06 K_W11 K_U11
LO4	can design, program and deploy an advanced user interface, for example. interactive communication system IVR	K_W03 K_W10 K_U11
LO5	by creating interfaces student draws attention to the non-technical apects: ergonomics, aesthetics, comfort, etc. Able to identify and resolve the dilemmas associated with the divergence of needs / user expectations and technological limitations, economic, etc.	K_U13 K_U14 K_K04

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	exam	L
LO2	report on the exercise grade	Sw
LO3	report on the exercise grade	Sw
LO4	report on the exercise grade	Sw
LO5	exam	Sw

Student workload (in hours)	**No. of hours**
1 - Attendance at lectures -	30
2 - Attendance at laboratories -	15
3 - Participation in student-teacher sessions -	5
4 - Preparation of reports -	78
5 - Preparation for the exam -	20
6 - Presence during exam -	2
TOTAL:	**150**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	52 (1)+(2)+(3)+(6)	2.1
Student workload – practical activities	93 (4)+(2)	3.7

Basic references	1. Julie A. Jacko (Ed.). (2012). Human-Computer Interaction Handbook (3rd Edition). CRC Press. ISBN 1-4398-2943-8 2. M.H. Cohen et al: Voice User Interface Design, Addison Wesley, 2004 3. A. Dix, J. Finlay, G. D. Abowd, R. Beale, Human-Computer Interaction (3rd Edition), Pearson, 2004
Supplementary references	1. W.O. Galitz: The Essential Guide to User Interface Design. An Introduction to GUI Design Principles and Techniques, Wiley, 2007. 2. J. Mariani: Language and Speech Processing, Wiley, 2009. 3. J. Preece, Y. Rogers, H. Sharp: Interaction Design: Beyond Human-Computer Interaction, 3nd ed., Wiley, 2011.

Organisational unit conducting the course	Department of Digital Media and Computer Graphics	Date of issuing the programme
Author of the programme	dr inż. Marcin Skoczylas	Feb. 18, 2022

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW – field work,S – seminar