DESCRIPTION OF THE MODULE

TITLE OF THE MODULE	Code
Module name: GUI development	**4.1.7**
Course name: Human-computer interaction (HCI)	

Teacher(s)	Department
Coordinating: Serdiuk Serhii (serdjuksn@gmail.com) Others: Kaminskaya Zhanna (kaminskaya_zhana@mail.ru)	Software Tools

Study cycle	Level of the module	Type of the module
BA		compulsory

Form of delivery	Duration	Language(s)
Lab session/hands on	16 weeks	english/ukrainian

Prerequisites	
Prerequisites: - System analysis of Man-Machine Systems (MMS) - C++ or C# - Information perception by human being - MMS Ergonomic requirements - GUI usability - GUI development	**Co-requisites (if necessary):** - Minimum knowledge of computer design is an advantage

Credits of the module	Total student workload	Contact hours	Individual work hours
2	60	30	30

Aim of the module (course unit): competences foreseen by the study programme		
- Training for MMS psycho-engineering and ergonomic design methods - Training for common system interface design methods under consideration of human-computer environments - Providing capability for Embedded Systems GUI development		

Learning outcomes of module (course unit)	Teaching/learning methods	Assessment methods
Understanding of ergonomic requirements for each component of the "man-machine-environment" (MME) such as: human operator, technical facilities, workplaces, production environment	**Classroom teaching**	exam, applied task
Knowledge of methods utilizing formalization and modeling options for operator activity applicable to embedded system	**Classroom teaching**	labs reports, applied task
Understanding the principles of information systems virtual reality design	**Classroom teaching**	exam, case-study
- GUI development - GUI usability testing	**Hands on lab session**	report on student integrated project, labs reports
- Quantitative assessment of human operator's activity	**Hands on lab session**	report on student integrated project

Generic competences			Learning outcomes of the programme	
1.	Ability for abstract thinking, analysis and synthesis	**1.1**	Knowledge\understanding various approaches and methods for system analysis and synthesize	
		1.2	Ability to implement basic methods of scientific cognition in MMS sphere	
2.	Ability to apply knowledge in practical situations	**2.1**	Knowledge\understanding various approaches and methods to solve professional tasks	
		2.2	Ability to implement various technologies to solve professional tasks	
3.	Skills in the use of information and communications technologies	**3.1**	Knowledge\understanding appropriate application software and communications technologies for design tasks	
		3.2	Ability to use technology as a tool to research, design, evaluate of MMS and their GUI	
4.	Ability to design and manage projects	**4.1**	Collaboration on corporate interiors projects, including programming client needs, conceptual design, schematic design, and development of MMS	
		4.2	Ability to apply user-centered design and ergonomics principles in MMS design	
Subject specific competences			**Learning outcome of the programme**	
5.	To analyze subject area, identify, classify and describe problems; find the methods and approaches for solving them; define requirements	**5.1**	Knowledge of methods of system-wide interface design of human interaction - the computer environment	
		5.2	Ability to work out a system analysis of MMS	
6.	To guarantee the quality of MMS according to the requirements	**6.1**	Knowledge of the ergonomic requirements for each component of MME	
		6.2	Ability to apply user-centered design and ergonomics principles in the design of a wide range of programming interfaces	
		6.3	Ability to evaluate GUI	
7.	To design MMS, including modelling (formal description) of structure and processes	**7.1**	Knowledge of formalization and modeling methods for MMS and operator activity	
		7.2	Ability to quantify the efficiency, quality and reliability of human-computer interaction	
8.	To develop and bring into effect new competitive ideas in the area of HCI	**8.1**	Knowledge\understanding the principles of information systems virtual reality design	
		8.2	Ability to design intelligent man-machine interfaces	

Themes	Contact work hours							Time and tasks for individual work	
	Lectures	Consultation	Seminars	Practical work	Laboratory work	Placements	Total contact work	Individual work	Tasks
1 Understanding of ergonomic requirements for each component of the "man-machine-environment" (MME) such as: human operator, technical facilities, workplaces, production environment	3				2		5	2	
2. Knowledge of methods utilizing formalization and modeling options for operator activity applicable to embedded system	3				2		5		Study of specialized tools
3. Understanding the principles of information systems virtual reality design	4						4	4	
4. GUI development					8		8	4	Human-centered design
5. GUI usability testing	2				6		8	4	GUI assessment
6. Quantitative assessment of human operator's activity								16	Improving the efficiency and quality of an operator's activity

Assessment strategy	Weight in %	Deadlines	Assessment criteria
Products and performance assessments	50		All labs should be passed
Written and Oral Exam	50		Grade A (excellent) - clarity of expression – excellent, confident delivery, practical tasks – full done. Grade B (good) – clarity of expression – good, thoughts and ideas clearly expressed, practical tasks - well done. Grade C (good) - clarity of expression – well-placed, delivery is fluctuate, practical tasks - well done. Grade D (passed) - clarity of expression – poor, delivery is fluctuate, practical tasks done with mistakes. Grade E (fail) - failure in theoretical or practical tasks.

Author	Year of issue	Title	No of periodical or volume	Place of printing. Printing house or internet link
Compulsory literature				
Sergeev S.F., Paderno P.I., Nazarenko N.A.	2011	Introduction to intelligent interfaces design		Sanct-Peterburg: SPbGU ITMO [RU]
Jenifer Tidwell	2011	Designing Interfaces		O'Reilly Media; Second Edition edition

Alferov G.V., Kulakov F.M., Nechaev A.I.		Information systems of virtual reality in mechatronics and robotics		Sanct-Peterburg: SOLO [RU]
Munipov V.M.	2001	Ergonomics: human-centered design technology, software tools and environments		Moscow: Logos [RU]
A. N. Adamenko, A. T. Asherov, I. L. Berdnikov; under the total. Ed. A. I. Gubinskogo	1993	Information and control man-machine systems: research, design, test. Reference book		Moscow: Mashinostroeniye [RU]
Serdiuk S.M., Kaminskaya Z.К.	2014	Laboratory works guide for in "Human-Computer Interaction" for students of specialty 7.05010301 "Software systems" and 7.05010302 "Software Engineering", full time study		Zaporozhye: ZNTU [UA]
Additional literature				
		ISO/IEC 9126 Software engineering. Product quality. Part 1: Quality model.		http://www.iso.ch
		ISO/IEC 25010.2-2008 Software engineering. Software product Quality Requirements and Evaluation (SQuaRE). Software and quality in use models		http://www.jtc1-sc7.org
		Usability Professionals' Association		http://upa.org.ru/Publications.aspx
Solso R.	2006	Cognitive psychology		Sanct-Peterburg: Piter [RU]