



National University Zaporizhzhia Polytechnic  
DESCRIPTION / Syllabus of discipline / module

<b>Short name of the university / department</b>	NU «Zaporizhzhia Polytechnic»
<b>date (month / year)</b>	08/2020
<b>Module name / Course name</b>	Medical Informational Infrastructure
<b>Code:</b>	PPN 01

<b>Teacher(s)</b>	<b>Department</b>
Galyna Tabunshchuk Olha Petrova	Radioengineering and Telecommunication

<b>Study cycle</b>	<b>Level of the module</b>	<b>Type of the module</b>
MSc	1	mandatory

<b>Form of delivery</b>	<b>Duration</b>	<b>Language(s)</b>
Lectures/Hands-on Lab session	15 weeks	Ukrainian

<b>Connection with other disciplines</b>	
<b>Previous:</b>	<b>Related (if required):</b>

<b>Credits of the module</b>	<b>Total student workload</b>	<b>Contact hours</b>	<b>Individual work hours</b>
5	150	60	90

**Aim of the module (course unit): competences foreseen by the study programme**

The aim of teaching the discipline "Medical Information Infrastructure" is to train professionals capable of designing, modeling and developing information infrastructure for modern telemedical and biomedical systems.

general competencies: ability to abstract thinking, analysis and synthesis; knowledge and understanding of the subject area and understanding and understanding of professional activity; ability to apply knowledge in practical situations.

professional competencies: the ability to implement the principles of a systematic approach in the study of processes occurring in telecommunications and radio systems and means of telemedicine and biomedical purposes; ability to develop, improve and use modern software, hardware and software and hardware of telecommunication and radio engineering means and systems of biomedical purpose; ability to develop software and hardware for embedded biomedical systems and telemedicine.

<b>Learning outcomes of module (course unit)</b>	<b>Teaching/learning methods</b>	<b>Assessment methods</b>
be able to organize their own professional, research and innovation activities based on the principles of a system approach and research methodology. to know the basic principles of designing medical information systems, specialized server	Theoretical knowledge obtained during lectures and consultations	Exame



<p>applications, medical information databases that meet DICOM standards. Be able to develop and implement modern and promising telemedicine systems and technologies for biomedical and telemedicine based on remote use.</p> <p>To know and practically apply methods and models of development of embedded biomedical systems, as well as technologies for the implementation of wireless sensor networks. Be able to design and use embedded systems for biomedical processing</p>	<p>Practical knowledge gained during laboratory and consultations</p> <p>Independent and under the guidance of a teacher</p>	<p>Labs sessions</p> <p>No special assessment</p>
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Themes	Contact work hours					Time and tasks for individual work		
	Lectures	Consultation	Seminars	Practical work	Laboratory work	Total contact work	Individual work	Tasks
Topic 1.. The current state of informatization of medical and telemedicine security systems	2					2		Basic theoretical knowledge
Topic 2.. Digital transformations in the medical field	1					1	9	Study of existing national and world trends in digital transformations in the field of implants
Topic 3. Internet of medical things	1				7	8	20	Study of world experience on existing achievements in the field of medical Internet of Things. Abstract
Topic 4. Types and classification of medical information systems	2					2		Study of types and classification of medical information systems
<b>Topic 5. Stages of the software life cycle for telemedicine and biomedical systems.</b>	2					2		Study of software life cycle for telemedicine and biomedical systems



Topic 6. System conceptualization and requirements analysis	4					4	10	Using the principles of a systems approach and research methodology for requirements analysis
Topic 7. Analysis of the subject area.	4				7	11	10	Using the UML language to model interactions in telemedicine and medical systems
Topic 8. Modeling the behavior of the system.	4					4	10	Design and implementation of client-server architecture for telemedicine and medical systems
Topic 9. System design	4				14	18	30	
	<b>30</b>				<b>30</b>	<b>60</b>	<b>105</b>	

Assessment strategy	Weight in %	Deadlines	Assessment criteria
current assessment	50	during the semester	theoretical report on each topic
laboratory work defense	12,5		defense of laboratory work №1
	12,5		defense of laboratory work №2
	12,5		defense of laboratory work №3
passing the written exam	12,5	defense of laboratory work №4	
	90-100	after the module during the examination session	excellent
	75-89		good
	60-74		enough
	35-59		unsatisfactorily with mandatory re-study of the discipline
0-34	unsatisfactorily with obligatory re-study of the discipline		

Author	Year of issue	Title	Information about the publication	Place of printing. Printing house or internet link
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<b>Compulsory literature</b>				
Г.В. Табунщик, Т.І. Каплиєнко, О.А. Петрова, О.В. Шитікова	2021	Проектування інформаційної інфраструктури медичних та телемедичних систем. Навч. посібник.	Євро-Волинь, 198с.	Луцьк
Г. В. Табунщик, О.А. Петрова	2019	Методичні вказівки до лабораторних робіт з дисципліни «Проектування сучасних інформаційних систем» для студентів магістратури спеціальності 172 «Телекомунікації та радіотехніка» освітньої програми «Медично інформаційна інфраструктура» всіх форм навчання	2019	<a href="http://eir.zp.edu.ua/bitstream/123456789/4909/1/Tabunshchik_Methodological.pdf">http://eir.zp.edu.ua/bitstream/123456789/4909/1/Tabunshchik_Methodological.pdf</a>
Г. В. Табунщик, О.А. Петрова	2019	Методичні вказівки до самостійних робіт з дисципліни «Проектування сучасних інформаційних систем» для студентів магістратури спеціальності 172 «Телекомунікації та радіотехніка» освітньої програми «Медично інформаційна інфраструктура» всіх форм навчання	2019	<a href="https://moodle.zp.edu.ua/course/view.php?id=345">https://moodle.zp.edu.ua/course/view.php?id=345</a>
<b>Additional literature</b>				
G. Tabunshchuk, V. Shalomeev, P. Arras	2020	Monitoring System for Tests of the Mg Implants	Proceedings of The Third International Workshop on	Zaporizhzhia, Ukraine,



			Computer Modeling and Intelligent Systems (CMIS-2020), April 27-May 1,., pp. 70-78, <a href="http://ceur-ws.org/Vol-2608/paper6.pdf">http://ceur-ws.org/Vol-2608/paper6.pdf</a>	
G. Tabunshchuk, O. Petrova, P. Arras	2020,	Designing a new academic course for engineering students on medical informational infrastructure	Conf. proc. Of Dortmund International research conference	Dortmund
Бондарчук О. О.	2017,	Порівняльна характеристика розподіленої та централізованої архітектури у контексті створення сучасних інформаційних систем	C.52-54	— К.: Медірент,
В.Л. Плєскач, Т.Г. Затоначка	2011.	Інформаційні системи і технології на підприємствах : підручник	— 718с.	К. : Знання,

Prepared in framework of ERASMUS+ project «Innovation Multidisciplinary Training Program for BA and MSc Trainings for Implants for Biological Engineering» 586114-EPP-1-2017-1-ES-EPPKA2-CBHE-JP

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