GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Multimedia Data Exchange and Storage, PG_00053511		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Jacek Rumiński	
	Teachers		

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	15	2.0	8.0	25

Subject objectives	The aim of the subject is to get the student's knowledge and skills in the basics of exchange and storage of data in medicine

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U07] can apply methods of process and function support, specific to the field of study	Student skills gained - Interpretation of the format of a multimedia medical data (DICOM, HL7) - The design of data structures for multimedia medical data (DICOM, HL7) - Selection of multimedia data compression methods, - Designing systems for the exchange of multimedia data including restrictions on medicine, - Description of the contents of multimedia data, - The design of interfaces to search multimedia data based on their content (descriptors) - The interpretation of standards and recommendations on the storage and exchange of multimedia data, - Design data archiving systems, - Secure data archiving systems.	[SU1] Assessment of task fulfilment
[K6_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Student knowledge gained - Interpretation of the format of a multimedia medical data (DICOM, HL7) - The design of data structures for multimedia medical data (DICOM, HL7) - Selection of multimedia data compression methods, - Designing systems for the exchange of multimedia data including restrictions on medicine, - Description of the contents of multimedia data, - The design of interfaces to search multimedia data based on their content (descriptors) - The interpretation of standards and recommendations on the storage and exchange of multimedia data, - Design data archiving systems, - Secure data archiving systems.	[SW1] Assessment of factual knowledge

Subject contents

1. Multimedia, multimedia storage and exchange - an introduction 2. Standards for exchange of multimedia data: DCT and JPEG 3. Standards for exchange of multimedia data: JPEG2000 - an introduction 4. Standards for exchange of multimedia data: JPEG2000 - DWT 5. Standards for exchange of multimedia data: JPEG2000 - data encoding, controlling of scale and quality 6. Standards for exchange of multimedia data: HD Photo/JPEG XR 7. Standards for exchange of multimedia data: MPEG 1/2 8. Standards for exchange of multimedia data: MPEG 4 9. Standards for exchange of multimedia data: MPEG 4 - audio, still image and video content descriptors 10. Standards for exchange of multimedia data: MPEG 4 - description definition language and exchange of documents 11. Standards for exchange of multimedia data: MPEG 4 - content-based retrival 12. W3C-based standards for multimedia exchange (e.g. XML) 13. Standards for medica data exchange: DICOM 14. Standards for medica data exchange: DICOM 15. Standards for medica data exchange: HL7 16. Standards for medica data exchange: EDIFACT, ebXML 17. PACS systems 18. Information systems in healthcare (e.g. HIS, DIS, RIS) 19. Electronic healthcare records - document formats and European standards 20. Electronic healthcare records - HL7 CDA 21. Electronic healthcare records - electronic patient cards 22. Design and implementation of data storage services 23. Design and implementation of services for data acquisition and data retrieval 24. Organization and technologies for data archiving 25. Data archiving systems and arrays of discs 26. Network-based solutions in designing of data archiving systems (e.g. NAS) 27. Hibrid systems for data archiving 28. Designing and implementation of Disaster Recovery procedures 29. Secure methods for data storage 30. Systems of continuous power supply

Prerequisites and co-requisites

No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam	51.0%	60.0%
Practical exercise	50.0%	40.0%

Recommended reading

Basic literature	HL7, norma i dokumenty HL7, dostęp: http://www.hl7.org K. R. Rao and P. Yip, Discrete Cosine Transform: Algorithms, Advantages, Applications (Academic Press, Boston, 1990). Materiały do przedmiotu opracowane w formie edukacji na odległość, dostęp: http://uno.biomed.gda.pl Metody i urządzenia do archiwizacji danych: http://www.storagestandard.pl/ N. Ahmed, T. Natarajan, and K. R. Rao, "Discrete Cosine Transform", IEEE Trans. Computers, 90-93, Jan 1974. NEMA, Norma DICOM, dostęp: http://medical.nema.org Skrypt z materiałami do przedmiotu Wymiana i składowanie danych multimedialnych

	Supplementary literature	No requirements
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	