GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Diagnostic techniques in medicine, PG_00057485		
Field of study	Mechanical and Medical Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study 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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	Michał Penkowski	
	Teachers	Michał Penkowski	

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	15.0	30

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	30	3.0	17.0	50

Subject objectives

The aim of the course is to broaden students' knowledge of the main diagnostic techniques used in medicine.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K02] He/she understands outer aspects of influence of mechanical engineer and manager, their social consequences and impact on the environment, needs to follow the rules of ethics and respect for the diversities of views and cultures	The aim of the course is to familiarize students with the main diagnostic techniques used in medicine.	[SK3] Assessment of ability to organize work [SK1] Assessment of group work skills
[K7_W09] He/she in-depth knowledge related to diagnosis techniques and medical procedures in the scope of the field of study of mechanical-medical engineering	The student has in-depth knowledge of diagnostic techniques used in medicine	[SW1] Assessment of factual knowledge
[K7_U03] He/she can prepare an elaboration and presentation related to the general and specific engineering tasks located in Polish and foreign languages	The student has the ability to prepare and deliver presentations in the field of diagnostic techniques	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents

Theory and technique of CT. Specific applications of CT. Types of blood tests. PET construction. PET scan. Magnetic resonance imaging and its application in diagnostics. The use of diagnostic ultrasonography. Types of transducers, types of presentation, Doppler effect. Electromyography and nerve conduction studies. Endoscopy, laparoscopy, uteroscopy, cystoscopy, gastroscopy, colonoscopy. Elementary analysis of the elements of the body. Intake analysis, calorimetry. Detection of toxins and chemical warfare agents. Identification of bacterial pathogens.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Presentation	60.0%	50.0%
Test	60.0%	50.0%

Recommended reading	Basic literature	1. J. Szabatin. Podstawy teorii sygnałów. WKŁ Warszawa 2003. 2. Problemy biocybernetyki i inżynierii biomedycznej pod red. M. Nałęcza. T.2. Biopomiary. WKiŁ Warszawa 1990. 3. Podstawy biofizyki pod red. A. Pilawskiego. PZWL Warszawa 1985.
	Supplementary literature	1. S. W. Smith. Cyfrowe przetwarzanie sygnałów. Praktyczny poradnik dla inżynierów i naukowców. BTC, Warszawa, 2003. 2. A. Straburzyńska-Lupa, G. Straburzyński. Fizjoterapia. PZWL Warszawa 2003. 3. J. Ross Macdonald. Impedance spectroscopy. Wiley-Interscience 2005.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Description and explanation of CT. 2. Types of blood testing 3. Types of transducers 4. Doppler effect 5. Uteroscopy	
Work placement	Not applicable	