



Pomeranian Medical University in Szczecin

SYLLABUS of the MODULE (SUBJECT) General Information

Module title: Biophysics	
Module type	Obligatory
Faculty PMU	Faculty of Medicine and Dentistry
Major	Dentistry
Level of study	long-cycle (S2J)
Mode of study	full-time studies
Year of studies, semester	Year 1, semester I
ECTS credits (incl. semester breakdown)	3
Type/s of training	seminars (10h)/ practical classes (30h)
Form of assessment*	<input checked="" type="checkbox"/> graded assessment: <ul style="list-style-type: none"> <input type="checkbox"/> descriptive <input checked="" type="checkbox"/> test <input type="checkbox"/> practical <input type="checkbox"/> oral <input type="checkbox"/> non-graded assessment <input type="checkbox"/> final examination <ul style="list-style-type: none"> <input type="checkbox"/> descriptive <input type="checkbox"/> test <input type="checkbox"/> practical <input type="checkbox"/> oral
Head of the Department/ Clinic, Unit	Dr hab. n. med. Wojciech Podraza, podrazaw@pum.edu.pl
Tutor responsible for the module	Dr hab. n. med. Wojciech Podraza, podrazaw@pum.edu.pl
Department's website	https://www.pum.edu.pl/wydzialy/wydzial-lekarsko-biotechnologiczny/zaklad-fizyki-medycznej/information-for-students
Language	English

* replace ☐ into ☒ where applicable

Detailed information

Module objectives		Lectures and exercises are designed to introduce students to the basic issues of physics and biophysics regarding the physical foundations of physiological processes and to familiarize themselves with the physical phenomena underlying modern medical diagnostics and therapy in medicine.
Prerequisite /essential requirements	Knowledge	physics and mathematics at the matriculation level
	Skills	is able to define and estimate the measurement error, graphically present the results of measurements, know the basic mathematical functions, know the operations on exponents and logarithms
	Competences	openness to knowledge, self-study habit, willingness to cooperate in a group, teamwork skills

Description of the learning outcomes for the subject /module

No. of learning outcome	Student, who has passed the (subject) knows /is able to /can:	SYMBOL (referring the standards)	Method of verification of learning outcomes*
W01	Explains rules of statics and biomechanics regarding human body	B. W7	K
W02	Explains mechanics of masticatory system	B. W8	K
W03	Describes imaging techniques of tissues and organs and operating principles of appropriate diagnostic equipment	B. W9	K
W04	Describes principles of operation of ultrasonic equipment	B. W10	K
W05	Describes principles of photometry and optical fibers and application of light sources in dentistry	B. W11	K
W06	Describes principles of operation of lasers in dentistry	B. W12	K
W07	Explains principles of operation of dental equipment	B.W13	K
U01	Interprets physical phenomena occurring in stomatognathic system	B. U2	SL
U02	Uses physical processes in dental practice	B. U3	SL
K01	Notifies and recognizes own limitations, make self-assessment of educational deficits and needs	K.5	SL
K02	Draws conclusions from own measurements or observations	K.8	SL

Table presenting LEARNING OUTCOMES in relation to the form of classes							
No. of learning outcome	Learning outcomes	Type of training					
		Lecture	Seminar	Practical	Clinical classes	Simulations	E-learning
W01	B. W7		x				
W02	B. W8		x				
W03	B. W9		x				
W04	B. W10		x				
W05	B. W11		x				
W06	B. W12		x				
W07	B. W13		x				
U01	B. U2			x			
U02	B. U3			x			
K01	K.5			x			
K02	K.8			x			

Table presenting TEACHING PROGRAMME			
No. of a teaching programme	Teaching programme	No. of hours	References to learning outcomes
Winter semester			
Seminars			
TK01	Ultrasounds in medicine.	2	W04
TK02	Lasers in medicine.	2	W06, W07
TK03	Medical diagnostics.	2	W03, W07
TK04	Biomechanics.	2	W01, W02
TK05	Photometry and optical fibers.	2	W05
Practical classes			
TK01	Preliminary exercises	2	K01, K02
TK02	Spectroscopy I	2	U02, K01, K02
TK03	Thermoregulation	2	K01, K02
TK04	Ionizing radiation I	2	U02, K01, K02
TK05	Ultrasounds	2	U02, K01, K02
TK06	Spectroscopy II	2	U02, K01, K02
TK07	Ionizing radiation II	2	U02, K01, K02
TK08	Biopotentials	2	U01, K01, K02
TK09	Optics	2	U02, K01, K02
TK10	Spirometry	2	U01, K01, K02
TK11	EEG	2	K01, K02
TK12	Microscopes	2	U02, K01, K02
TK13	Metrology in dentistry	2	K01, K02
TK14	Student presentations	2	K01, K02
TK15	NMR	2	U02, K01, K02

Booklist
Obligatory literature:
1. Cameron J., Skofronic J.G., Grant R.M.: Physics of the Body, Medical Physics Publishing 1992
Supplementary literature:
1. „PHYSICS Principles with applications” Douglas C. Giancoli

Student's workload	
Form of student's activity (in-class participation; activeness, produce a report, etc.)	Student's workload [h]
	Tutor
Contact hours with the tutor	40
Time spent on preparation to seminars/ practical classess	
Time spent on reading recommended literature	10
Time spent on writing report/making project	
Time spent on preparing to colloquium	25
Time spent on preparing to exam	
Other	
Student's workload in total	75
ECTS credits for the subject (in total)	3
Remarks	

* Selected examples of methods of assessment:

EP – written examination

EU – oral examination

ET – test examination

EPR – practical examination

K – colloquium

R – report

S – practical skills assessment

RZC – practical classes report, incl. discussion on results

O – student's active participation and attitude assessment

SL – lab report

SP – case study

PS - assessment of student's ability to work independently

W – entry test

PM – multimedial presentation

other...