

Course Title: Biophysical fundamentals of medical technologies

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Address: Department of Biophysics, Św. Łazarza 16

Year: 2

Total number of hours: 50

Lectures: -

Seminars: 20

Labs/Practicals: 28

Others (e.g. recitation): -

Exams: 2

Conduct/Dress Code:

Student's Evaluation:

-credit requirements: Seminar/Laboratory credits – see remarks

-attendance requirements: Seminar 1 + Laboratory 1

-type of the final exam: Test exam

-retake information: May/June, 2018

	Da y	Time	Type of class es	N0 of hour s	Grou p	Topic	teacher	place
week 16 February 19 - 23	Tu	15 ⁰⁰ – 16 ³⁰	sem	2	B	Biophysical description of biological systems	ER	S2
	Tu	15 ⁰⁰ – 16 ³⁰	lab	2	A	Digital processing of data and images	BL/TR	201
	We	14 ⁴⁵ – 16 ¹⁵	sem	2	A	Biophysical description of biological systems	ER	S2
	We	14 ⁴⁵ – 16 ¹⁵	lab	2	B	Digital processing of data and images	BL/DD	201
	Th	14 ³⁰ – 16 ⁰⁰	sem	2	D	Biophysical description of biological systems	ER	S2
	Th	14 ³⁰ – 16 ⁰⁰	lab	2	C	Digital processing of data and images	GT/MS	201
	Fr	14 ⁴⁵ – 16 ¹⁵	sem	2	C	Biophysical description of biological systems	ER	S2
	Fr	14 ³⁰ – 16 ⁰⁰	lab	2	D	Digital processing of data and images	DD/GT	201
week 17 February 26 - March 02	Tu	15 ⁰⁰ – 16 ³⁰	sem	2	B	Structure of matter and conservation laws	ER	S2
	Tu	15 ⁰⁰ – 16 ³⁰	lab	2	A	Data acquisition and evaluation	BL/TR	201
	We	14 ⁴⁵ – 16 ¹⁵	sem	2	A	Structure of matter and conservation laws	ER	S2
	We	14 ⁴⁵ – 16 ¹⁵	lab	2	B	Data acquisition and evaluation	BL/DD	201
	Th	14 ³⁰ – 16 ⁰⁰	sem	2	D	Structure of matter and conservation laws	ER	S2
	Th	14 ³⁰ – 16 ⁰⁰	lab	2	C	Data acquisition and evaluation	GT/MS	201
	Fr	14 ⁴⁵ – 16 ¹⁵	sem	2	C	Structure of matter and conservation laws	ER	S2
	Fr	14 ³⁰ – 16 ⁰⁰	lab	2	D	Data acquisition and evaluation	DD/GT	201

week 18 March 05 - 09	Tu	15⁰⁰ – 16³⁰	sem	2	B	Introduction to transport phenomena	ER	S2
	Tu	15⁰⁰ – 17¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14⁴⁵ – 16¹⁵	sem	2	A	Introduction to transport phenomena	ER	S2
	We	14⁴⁵ – 17⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14³⁰ – 16⁰⁰	sem	2	D	Introduction to transport phenomena	ER	S2
	Th	14³⁰ – 16⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
	Fr	14⁴⁵ – 16¹⁵	sem	2	C	Introduction to transport phenomena	ER	S2
week 19 March 12 - 16	Fr	14³⁰ – 16⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
	Tu	15⁰⁰ – 16³⁰	sem	2	B	Biophysical background of electrophysiology	ER	S2
	Tu	15⁰⁰ – 17¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14⁴⁵ – 16¹⁵	sem	2	A	Biophysical background of electrophysiology	ER	S2
	We	14⁴⁵ – 17⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14³⁰ – 16⁰⁰	sem	2	D	Biophysical background of electrophysiology	ER	S2
	Th	14³⁰ – 16⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
week 20 March 19 - 23	Fr	14⁴⁵ – 16¹⁵	sem	2	C	Biophysical background of electrophysiology	ER	S2
	Fr	14³⁰ – 16⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
	Tu	15⁰⁰ – 16³⁰	sem	2	B	Biophysics of senses	ER	S2
	Tu	15⁰⁰ – 17¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14⁴⁵ – 16¹⁵	sem	2	A	Biophysics of senses	ER	S2
	We	14⁴⁵ – 17⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14³⁰ – 16⁰⁰	sem	2	D	Biophysics of senses	ER	S2
week 21 March 26 - April 06	Th	14³⁰ – 16⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
	Fr	14⁴⁵ – 16¹⁵	sem	2	C	Biophysics of senses	ER	S2
	Fr	14³⁰ – 16⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
						Day off		
week 22 April 09 - 13	Tu	15⁰⁰ – 16³⁰	sem	2	B	Interaction of EM radiation with biological systems	ER	S2
	Tu	15⁰⁰ – 17¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14⁴⁵ – 16¹⁵	sem	2	A	Interaction of EM radiation with biological systems	ER	S2
	We	14⁴⁵ – 17⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14³⁰ – 16⁰⁰	sem	2	D	Interaction of EM radiation with biological systems	ER	S2
	Th	14³⁰ – 16⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
	Fr	14⁴⁵ – 16¹⁵	sem	2	C	Interaction of EM radiation with biological systems	ER	S2
week 23 April 16 - 20	Fr	14³⁰ – 16⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
	Tu	15⁰⁰ – 16³⁰	sem	2	B	Medical application of radioisotopes/radiotherapy	ER	S2
	Tu	15⁰⁰ – 17¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14⁴⁵ – 16¹⁵	sem	2	A	Medical application of radioisotopes/radiotherapy	ER	S2
	We	14⁴⁵ – 17⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14³⁰ – 16⁰⁰	sem	2	D	Medical application of radioisotopes/radiotherapy	ER	S2
	Th	14³⁰ – 16⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
week 24 April 23 - 27	Fr	14⁴⁵ – 16¹⁵	sem	2	C	Medical application of radioisotopes/radiotherapy	ER	S2
	Fr	14³⁰ – 16⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
	Tu	15⁰⁰ – 16³⁰	sem	2	B	Radiology	ER	S2
	Tu	15⁰⁰ – 17¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14⁴⁵ – 16¹⁵	sem	2	A	Radiology	ER	S2
	We	14⁴⁵ – 17⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14³⁰ – 16⁰⁰	sem	2	D	Radiology	ER	S2
	Th	14³⁰ – 16⁴⁵	lab	3	C	LAB 3-10	GT/MS	201

	Fr	14 ⁴⁵ – 16 ¹⁵	sem	2	C	Radiology	ER	S2
	Fr	14 ³⁰ – 16 ⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
week 25 April 30 – May 04								
						Day off		
week 26 May 07 - 11	Tu	15 ⁰⁰ – 16 ³⁰	sem	2	B	CT and MRI	ER	S2
	Tu	15 ⁰⁰ – 17 ¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14 ⁴⁵ – 16 ¹⁵	sem	2	A	CT and MRI	ER	S2
	We	14 ⁴⁵ – 17 ⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14 ³⁰ – 16 ⁰⁰	sem	2	D	CT and MRI	ER	S2
	Th	14 ³⁰ – 16 ⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
	Fr	14 ⁴⁵ – 16 ¹⁵	sem	2	C	CT and MRI	ER	S2
	Fr	14 ³⁰ – 16 ⁴⁵	lab	3	D	LAB 3-10	DD/GT	201
week 27 May 14 - 18	Tu	15 ⁰⁰ – 16 ³⁰	sem	2	B	Ultrasonography	ER	S2
	Tu	15 ⁰⁰ – 17 ¹⁵	lab	3	A	LAB 3-10	BL/TR	201
	We	14 ⁴⁵ – 16 ¹⁵	sem	2	A	Ultrasonography	ER	S2
	We	14 ⁴⁵ – 17 ⁰⁰	lab	3	B	LAB 3-10	BL/DD	201
	Th	14 ³⁰ – 16 ⁰⁰	sem	2	D	Ultrasonography	ER	S2
	Th	14 ³⁰ – 16 ⁴⁵	lab	3	C	LAB 3-10	GT/MS	201
	Fr	14 ⁴⁵ – 16 ¹⁵	sem	2	C	Ultrasonography	ER	S2
	Fr	14 ³⁰ – 16 ⁴⁵	lab	3	D	LAB 3-10	DD/GT	201

Abbreviations:

ER – Prof. Eugeniusz Rokita
GT – Grzegorz Tatoń, PhD
BL – Bartosz Lisowski, MSc
TR – Tomasz Rok, PhD
DD – Daniel Dziob, MSc
MS – Michał Świątek, MSc

Remarks:

SEMINARS - 1|10 □ week 16|27

At the end of each seminar student has to solve 4÷5 problems directly correlated with the topic of the seminar. The solution of problems will be evaluated using (0|10) point scale.

LAB - 1|2 □ week 16|17

First and second meetings are treated as an introduction to the laboratory. Students will be split into 2-person teams and will complete one exercise (Data acquisition and evaluation) for training. Moreover, detailed schedule of the laboratory (Lab 3|10) for each team will be announced during 2nd laboratory.

LAB - 3|10 □ week 18|27

Each team has to complete 8 exercises from the list given below (1 per week).

LAB	Description
3.	Ultrasonic imaging.
4.	Principles of magneto-therapy.
5.	Electrocardiography.
6.	Applanation tonometry
7.	Digital subtraction angiography.
8.	Strength of bone.
9.	Model of the respiratory system.
10.	Model of the cardiovascular system.
11.	Haemodialysis, blood purification system.
12.	Electro-therapy.

To pass each exercise student has to complete himself a simple experiment and has to prepare a report containing results, calculations, discussion of the results and final conclusions. The report will be evaluated using (0|10) point scale.

Seminar/Laboratory credit □ 60% of maximal number of points (60/48 - sem/lab)