

## SYLLABUS

### LASERS IN MEDICINE

concerning the cycle of education 2021-2027

Academic year 2021/2022

#### 1. BASIC INFORMATION CONCERNING THIS SUBJECT

Subject	Diagnostic systems in medicine
Course code *	SDM/B
Faculty of (name of the leading direction)	Medical College of The University of Rzeszów
Department Name	Department of Photomedicine and Physical Chemistry, English Division
Field of study	Medical
level of education	Uniform master studies
Profile	General academic
Form of study	Stationary / non-stationary
Year and semester	Year I, semester II
Type of course	facultative
Language	English
Coordinator	Dr hab. n. med. David Aebisher, prof. UR
First and Last Name of the Teachers	Dr hab. n. med. David Aebisher, prof. UR Mgr inż. Klaudia Dynarowicz

\* - According to the resolutions of Educational Unit

#### 1.1. Forms of classes, number of hours and ECTS

Semester No.	Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Practical	Other	Number of points ECTS
II					15				1

#### 1.2. The form of class activities

X classes are in the traditional form

X classes are implemented using methods and techniques of distance learning

## SEMINARS- HYBRID FORM, ON LINE

### 1.3 Examination Forms (exam, credit with grade or credit without grade)

## 2.BASIC REQUIREMENTS

PHYSICS
CHEMISTRY
BIOLOGY
BASIC OPERATIONS ON DIRECTORIES AND FILES.
SKILLS TO RECOGNIZE BASIC COMPUTER PROGRAMS.

## 3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS

### 3.1 Objectives of this course

C <sub>1</sub>	Introduce students to aspects of diagnostics in medicine considering basic physics, tissue interactions, diagnostics and therapeutics, and therapeutic guidelines
C <sub>2</sub>	Provide students with the technical basics of medical laser systems, associated instruments, modes of laser light delivery, and endoscopy
C <sub>3</sub>	Provide students with an introduction to application of diagnostics and disease treatment in medical sub-disciplines including: ophthalmology, dermatology, cardiovascular disease, urology, otorhinolaryngology, neurology, dentistry, and oncology

### 3.2 OUTCOMES FOR THE COURSE

EK (the effect of education)	The content of learning outcomes defined for the class (module)	Reference to directional effects <sup>1</sup>
EK_01	Student knows the basic methods of diagnostics used in medicine	B.W <sub>31</sub>
EK_02	Student knows the basic equipment in medical physics	B.W <sub>32</sub>

<sup>1</sup>In the case of a path of education leading to obtaining teaching qualifications, also take into account the learning outcomes of the standards of education preparing for the teaching profession.

<b>EK_03</b>	student knows how to proceed with problems in medical physics laboratory	<b>B.W33</b>
<b>EK_04</b>	student knows how to prepare report and presentation	<b>B.U11</b>
<b>EK-05</b>	SELECTS THE APPROPRIATE STATISTICAL TEST, CONDUCTS BASIC STATISTICAL ANALYZES AND USES APPROPRIATE METHODS OF PRESENTING THE RESULTS; INTERPRETS THE RESULTS OF THE META-ANALYSIS, AND ALSO ANALYZES THE LIKELIHOOD OF SURVIVAL	<b>B.U12</b>

### 3.3 CONTENT CURRICULUM

#### A. Problems of the lecture

#### B. Problems of auditorium, seminar, laboratory and practical classes

Course contents	Hours
1. Basic of medical physics	3h
2. Understanding medical physics and diagnostics safety	2h
3. Understanding diagnostics and therapeutics treatment	2h
4. Diagnostics laboratory equipment (MRI, CT, X-ray)	2h
5. Current Physical medicine	2h
6. Current Medical Physics	2h
7. New trends in diagnostics (laser and optical methods)	2h

### 3.4 Didactic methods

Seminar

multimedia presentation, distance learning methods

text analysis with discussion, project method (research, implementation, practical project), group work (task solving, discussion), didactic games, distance learning methods

## 4. METHODS AND EVALUATION CRITERIA

### 4.1 Methods of verification of learning outcomes

Symbol of effect	Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes)	Form of classes
<b>EK_01</b>	LECTURES - FINAL WRITTEN TEST SEMINARS - FINAL CREDIT WITH AN ASSESSMENT INCLUDING: STUDENT'S SKILLS, ATTENDANCE AND ASSESSMENT OF THE ABILITY TO WORK ON A COMPUTER	<b>SEMINARS</b>
<b>EK_02</b>	LECTURES - FINAL WRITTEN TEST SEMINARS - FINAL CREDIT WITH AN ASSESSMENT INCLUDING: STUDENT'S SKILLS, ATTENDANCE AND ASSESSMENT OF THE ABILITY TO WORK ON A COMPUTER	<b>SEMINARS</b>
<b>EK_03</b>	LECTURES - FINAL WRITTEN TEST SEMINARS - FINAL CREDIT WITH AN ASSESSMENT INCLUDING: STUDENT'S SKILLS, ATTENDANCE AND ASSESSMENT OF THE ABILITY TO WORK ON A COMPUTER	<b>SEMINARS</b>
<b>EK_04</b>	LECTURES - FINAL WRITTEN TEST SEMINARS - FINAL CREDIT WITH AN ASSESSMENT INCLUDING: STUDENT'S SKILLS, ATTENDANCE AND ASSESSMENT OF THE ABILITY TO WORK ON A COMPUTER	<b>SEMINARS</b>

#### 4.2 Conditions for completing the course (evaluation criteria)

Seminars - final credit with an assessment of the ability to work on a computer, presentation, written test

5.0 - has knowledge of each of the contents of education at the level of 90% -100%

4.5 - has knowledge of each of the content of education at the level of 84% -89%

4.0 - has knowledge of each of the content of education at the level of 77% -83%

3.5 - has knowledge of each of the content of education at the level of 70% -76%

3.0 - has knowledge of each of the content of education at the level of 60% -69%

2.0 - has knowledge of each of the contents of education below 60%.

Skill assessment

5.0 - the student actively participates in classes, recognizes and knows how to properly call computer programs. Skillfully uses basic information techniques,

4.5 - the student actively participates in classes, with little help from the teacher he recognizes and is able to correctly name computer programs. He uses basic information techniques well

4.0 - the student actively participates in classes, with minor corrections of the teacher, committing minor mistakes in recognizing computer programs. He uses the information techniques well.

3.5 - the student participates in classes, with numerous corrections and teacher's instructions recognizes and is able to correctly name computer programs, often making mistakes while using information techniques

3.0 - the student participates in classes, with very many corrections and teacher's instructions recognizes and is able to correctly name computer programs, very often making mistakes when using information techniques

2.0 - the student passively participates in classes, commits blatant mistakes in recognizing and correct naming of computer programs, misusing information techniques

#### 5. Total student workload required to achieve the desired result in hours and ECTS credits

Activity	The average number of hours to complete the activity
Contact hours (with the teacher) resulting from the study schedule of classes	15
Contact hours (with the teacher) participation in the consultations, exams	15
Non-contact hours - student's own work (preparation for classes, exam, writing a paper, etc.)	
SUM OF HOURS	15
TOTAL NUMBER OF ECTS	1

*\* It should be taken into account that 1 ECTS point corresponds to 25-30 hours of total student workload.*

#### 6. TRAINING PRACTICES IN THE SUBJECT

NUMBER OF HOURS	-
RULES AND FORMS OF APPRENTICESHIP	-

#### 7. LITERATURE

<p><b>1. Basic literature:</b></p> <p><b>LEONARD I. GROSSWEINER, THE SCIENCE OF PHOTOTHERAPY: AN INTRODUCTION. SPRINGER SCIENCE &amp; BUSINESS MEDIA 2005</b></p> <p><b>JOSEPH HORNAK INTRODUCTION TO MRI.2005</b></p>
Additional literature

Acceptance Unit Manager or authorized person