Appendix number 1.5 to The Rector UR Resolution No. *12/2019*

SYLLABUS LASERS IN MEDICINE

concerning the cycle of education 2022-2028

Academic year 2023/2024

# BASIC INFORMATION CONCERNING THIS SUBJECT

|  |  |
| --- | --- |
| Subject | **LASERS IN MEDICINE** |
| Course code \* | **L/M** |
| Faculty of (name of the leading direction) | **Medical College of The University of Rzeszów** |
| Department Name | **Medical College of The University of Rzeszów** |
| Field of study | **Medical** |
| level of education | **Uniform master studies** |
| Profile | **General academic** |
| Form of study | **Stationary / non-stationary** |
| Year and semester | **Year III, semester V** |
| 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** |

**\* *-* According to the resolutions of Educational Unit**

# Forms of classes, number of hours and ECTS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Semester No. | Lectur e | Exercise | Conversatio n | Laborator y | Seminar | Z P | Praktical | Other | **Numbe r of points ECTS** |
| V | - | - | - | - | 25 | - | - | - | 1 |

* 1. **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)

# BASIC REQUIREMENTS

**PHYSICS CHEMISTRY BIOLOGY**

**BASIC OPERATIONS ON DIRECTORIES AND FILES.**

**SKILLS TO RECOGNIZE BASIC COMPUTER PROGRAMS.**

1. **OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS**

# Objectives of this course

|  |  |
| --- | --- |
| C1 | Introduce students to aspects of laser use in medicine considering basic physics, tissue interactions, diagnostics and therapeutics, and therapeutic guidelines. |
| C2 | Provide students with the technical basics of medical laser systems, associated instruments, modes of laser light delivery, and endoscopy |
| C3 | Provide students with an introduction to application of lasers to diagnostics and disease treatment in medical sub-disciplines including: ophthalmology, dermatology, cardiovascular disease, urology, otorhinolaryngology, neurology, dentistry, and oncology |

* 1. **OUTCOMES FOR THE COURSE**

|  |  |  |
| --- | --- | --- |
| **EK** (the effect of education) | The content of learning outcomes defined for the class (module) | Reference to directional effects  1 |
| **EK\_01** | KNOWS THE BASIC IT AND BIOSTATISTICAL METHODS USED IN  MEDICINE, INCLUDING MEDICAL DATABASES, SPREADSHEETS AND BASICS OF COMPUTER GRAPHICS | **B.W31** |
| **EK\_02** | KNOWS THE BASIC METHODS OF STATISTICAL ANALYSIS USED IN  POPULATION AND DIAGNOSTIC STUDIES | **B.W32** |
| **EK\_03** | KNOWS THE POSSIBILITIES OF MODERN TELEMEDICINE AS A TOOL TO  SUPPORT THE WORK OF A DOCTOR | **B.W33** |
| **EK\_04** | USES DATABASES, INCLUDING WEBSITES, AND SEARCHES FOR THE  NECESSARY INFORMATION USING THE AVAILABLE TOOLS | **B.U11** |
| **EK-05** | SELECTS THE APPROPRIATE STATISTICAL TEST, CONDUCTS BASIC  STATISTICAL ANALYZES AND USES APPROPRIATE METHODS OF | **B.U12** |

1In 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.

|  |  |  |
| --- | --- | --- |
|  | PRESENTING THE RESULTS; INTERPRETS THE RESULTS OF THE META-  ANALYSIS, AND ALSO ANALYZES THE LIKELIHOOD OF SURVIVAL |  |

# CONTENT CURRICULUM

* + 1. **Problems of the lecture**

# Problems of auditorium, seminar, laboratory and practical classes

|  |  |
| --- | --- |
| **Course contents** | **Hours** |
| 1. Basic physics of lasers and laser interaction with tissue | 5h |
| 2. Understanding medical laser systems and laser safety | 5h |
| 3. Understanding laser diagnostics and therapeutics | 5h |
| 4. Lasers and associated laboratory equipment | 5h |
| 5. Current Photobiology | 5h |

* 1. **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

# METHODS AND EVALUATION CRITERIA

* 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 |
| EK\_ 01 | 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 | **SEMINARS** |
| EK\_ 02 | 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 | **SEMINARS** |
| EK\_03 | 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 | **SEMINARS** |
| EK\_04 | 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 | **SEMINARS** |
|  |  |  |

# 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

# 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 | 25 |
| Contact hours (with the teacher) participation in the consultations, exams | 25 |
| Non-contact hours - student's own work  (preparation for classes, exam, writing a paper, etc.) |  |
| SUM OF HOURS | 25 |
| TOTAL NUMBER OF ECTS | 1 |

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

# TRAINING PRACTICES IN THE SUBJECT

|  |  |
| --- | --- |
| **NUMBER OF HOURS** | - |
| **RULES AND FORMS OF**  **APPRENTICESHIP** | - |

1. **LITERATURE**

|  |
| --- |
| 1. **Basic literature**:  **THE SCIENCE OF PHOTOTHERAPY: AN INTRODUCTION**  **LEONARD I. GROSSWEINER, SPRINGER SCIENCE & BUSINESS MEDIA 2005** |
| Additional literature |

Acceptance Unit Manager or authorized person