

## DESCRIPTION OF THE COURSE OF STUDY

|                              |                         |   |
|------------------------------|-------------------------|---|
| <b>Course code</b>           | <b>0912-7LEK-F-7-NT</b> |   |
| <b>Name of the course in</b> | Polish                  | <b>Nowoczesne techniki mikroskopowe w medycynie</b> |
|                              | English                 | <b>Modern microscopic techniques in medicine</b>    |

### 1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

|  |   |
|--|---|
| <b>1.1. Field of study</b>                             | Medicine                                    |
| <b>1.2. Mode of study</b>                              | Full-time                                   |
| <b>1.3. Level of study</b>                             | Uniform Masters' studies                    |
| <b>1.4. Profile of study*</b>                          | General academic                            |
| <b>1.5. Specialization*</b>                            | Lack  |
| <b>1.6. Unit running the course of study</b>           | The Faculty of Medicine and Health Sciences |
| <b>1.7. Person/s preparing the course description</b>  | Dr Małgorzata Łysek-Gładysińska             |
| <b>1.8. Person responsible for the course of study</b> | vacat                                       |
| <b>1.9. Contact</b>                                    | mglad@ujk.edu.pl                            |

### 2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

|   |              |
|---|--------------|
| <b>2.1. Affiliation with the module</b>                       | elective     |
| <b>2.2. Language of instruction</b>                           | English      |
| <b>2.3. Semesters in which the course of study is offered</b> | 2nd semester |
| <b>2.4. Prerequisites*</b>                                    | lack         |

### 3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

|                                |  |   |
|--------------------------------|--|---|
| <b>3.1. Form of classes</b>    | Lecture: 15 h  |   |
| <b>3.2. Place of classes</b>   | Traditional classes in didactic classroom WLiNoZ UJK |   |
| <b>3.3. Form of assessment</b> | Credit with grade                                    |   |
| <b>3.4. Teaching methods</b>   | Informative lecture                                  |   |
| <b>3.5. Bibliography</b>       | <b>Required reading</b>                              | 1. A. L. Mescher. Junqueira's Basic Histology Text & Atlas 13th Edition<br>2. M.J. Dykstra , L.E. Reuss . Biological Electron Microscopy. Theory, Techniques and Troubleshooting 2nd Edition. |
|                                | <b>Further reading</b>                               | 1. X. Chen, B. Zhen, H. Liu. Optical and digital microscopic imaging techniques and applications in pathology. Anal Cell Pathol. 2011; 34 (1-2): 5-18   |

### 4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED TEACHING OUTCOMES

|  |
|--|
| <p><b>4.1. Course objectives (including form of classes)</b><br/> <i>C1.</i>- Acquaintance with the basic microscope techniques used in medical research.<br/> <i>C2.</i>- Acquaintance with the correct principles of collecting and preserving the biological material for microscopic research.<br/> <i>C3.</i>- Ability to analyze cell structure at the level of light and electron microscopes using modern microscopic techniques.</p>  |
| <p><b>4.2. Detailed syllabus (including form of classes)</b><br/> The principles of operation of modern types of light microscopes (phase-contrast, interference-polarizing microscopes). Fluorescence microscopy: preparation techniques and selection of fluorochromes. Confocal microscope. Basic types of transmission electron microscopes (TEM) and scanning microscopes (SEM). The principles of collecting and preserving the test materials, methodology for preparing paraffin sections. Microtome</p> |

sectioning. Staining methods. Sample preparation for transmission electron microscopy (TEM). Application of modern microscopic techniques in medicine.

#### 4.3. Education outcomes in the discipline

| Code                                  | A student, who passed the course  | Relation to teaching outcomes |
|---------------------------------------|---|-------------------------------|
| within the scope of <b>KNOWLEDGE:</b> |   |                               |
| W01                                   | Knows basic cellular structures and their functional specifications.  | A.W4.                         |
| W02                                   | Knows the processes such as cell cycle, proliferation, differentiation, and cell aging, apoptosis and necrosis, and their importance for the functioning of the body.   | B.W22                         |
| within the scope of <b>ABILITIES:</b> |   |                               |
| U01                                   | Recognizes histological structures of organs, tissues, cells and cellular structures on the optical and electron microscope images, makes descriptions and interprets the structure and relations between the structure and the function. | A.U2.                         |

#### 4.4. Methods of assessment of the intended teaching outcomes

| Teaching outcomes (code) | Method of assessment (+/-) |   |     |                 |   |     |                 |   |     |                  |   |     |                 |   |     |                 |   |     |                 |   |     |
|--------------------------|----------------------------|---|-----|-----------------|---|-----|-----------------|---|-----|------------------|---|-----|-----------------|---|-----|-----------------|---|-----|-----------------|---|-----|
|                          | Exam oral/written*         |   |     | Test*           |   |     | Project*        |   |     | Effort in class* |   |     | Self-study*     |   |     | Group work*     |   |     | Others*         |   |     |
|                          | Form of classes            |   |     | Form of classes |   |     | Form of classes |   |     | Form of classes  |   |     | Form of classes |   |     | Form of classes |   |     | Form of classes |   |     |
|                          | L                          | C | ... | L               | C | ... | L               | C | ... | L                | C | ... | L               | C | ... | L               | C | ... | L               | C | ... |
| W01                      |                            |   |     | +               |   |     |                 |   |     |                  |   |     |                 |   |     |                 |   |     |                 |   |     |
| W02                      |                            |   |     | +               |   |     |                 |   |     |                  |   |     |                 |   |     |                 |   |     |                 |   |     |
| U01                      |                            |   |     | +               |   |     |                 |   |     |                  |   |     |                 |   |     |                 |   |     |                 |   |     |

\*delete as appropriate

#### 4.5. Criteria of assessment of the intended teaching outcome

The final grade is obtained on the basis of the final exam and attendance at the lectures

| Form of classes | Grade      | Criterion of assessment  |
|-----------------|------------|--|
| lecture (L)     | <b>3</b>   | Achievement 51% - 65% of the total number of points from test  |
|                 | <b>3,5</b> | Achievement 66% - 75% of the total number of points from test  |
|                 | <b>4</b>   | Achievement 76% - 85% of the total number of points from test  |
|                 | <b>4,5</b> | Achievement 86% - 95% of the total number of points from test  |
|                 | <b>5</b>   | Achievement 96% - 100% of the total number of points from test |

**5. BALANCE OF ECTS CREDITS – STUDENT’S WORK INPUT**

| Category  | Student's workload |
|---|--------------------|
|   | Full-time studies  |
| <i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i> | <b>15</b>          |
| <i>Participation in lectures*</i>   | <b>15</b>          |
| <i>Participation in classes, seminars, laboratories*</i>                            |                    |
| <i>Preparation in the exam/final test*</i>  |                    |
| <i>Others*</i>  |                    |
| <i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>                           | <b>10</b>          |
| <i>Preparation for the lecture*</i>   | <b>10</b>          |
| <i>Preparation for the classes, seminars, laboratories*</i>                         |                    |
| <i>Preparation for the exam/test*</i>   |                    |
| <i>Gathering materials for the project/Internet query*</i>                          |                    |
| <i>Preparation of multimedia presentation</i>                                       |                    |
| <i>Others*</i>  |                    |
| <i>TOTAL NUMBER OF HOURS</i>  | <b>25</b>          |
| ECTS credits for the course of study  | <b>1</b>           |

**Accepted for execution** (date and signatures of the teachers running the course in the given academic year)

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