## ***Summary of the working program of the academic discipline***

**« BIOPHYSICS »**

(name of the academic discipline)

General Educational Program of higher education (specialist's degree programs)

*33.05.01 Pharmacy*

Department: **MEDICAL BIOPHYSICS** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1. The purpose of mastering the discipline** participation in the formation of UC-1 competencies consists in the formation of students' ability to carry out a critical analysis of problem situations based on a systematic approach, to develop an action strategy.

2. Position of the academic discipline in the structure of the General Educational Program (GEP).

**2.1.** The discipline « Biophysics » refers to the core part of Block 1 (B1.РЕР.5) of GEP HE. The discipline is taught in 1,2 semesters/1year of study.

**3. Deliverables of mastering the academic discipline and metrics of competence acquisition**

Mastering the discipline aims at acquiring the following universal (UC) or/and general professional (GPC) or/and professional (PC) competencies

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| № | Compe-tence code | The content  of the competence  (or its part) | Code and name of the competence acquisition metric | As a result of mastering the discipline, the students should: | | |
| know | be able to | possess |
|  | UC-1 | Able to carry out a critical analysis of problem situations  based on a systematic approach,  develop an action strategy. | *ID-1 UС-1.1*  Knows: methods of critical analysis and evaluation of modern scientific achievements; basic principles of critical analysis.  *ID-2 UС-1.2*  Can: acquire new knowledge based on analysis, synthesis; collect data on complex scientific problems related to the professional field; search for information and solutions based on actions, experience and experience.  *ID-3 UС-1.3*  Has practical experience: research of the problem of professional activity with the use of analysis, synthesis and other methods of intellectual activity; development of an action strategy to solve professional problems. | Physical irregularities under-lying the processes occurring in the body; physical-  physical properties of biological tissues; mechanism- we are the effects of physical factors on the organ; the basics of the device of physiotherapy and diagnostic equipment; the rules of safety techniques when working with equipment; the latest achievements in the field of biophysics and prospects for their use in various areas of medicine-new and pharmacy. | To analyze the processes of the vital activity of biosystems using the laws of physics; to explain the physical properties of biological tissues, the functioning of systems using methods of physical and mathematical modeling; to justify the choice of a physical factor acting on the body with diagnostic and therapeutic to evaluate the available data of physiotherapy and diagnostic equipment. | Methods of measuring biophysical quantities; methods of compiling the simplest physical and mathematical models for studying biosystems; methods of obtaining information from various sources. |

**4. Volume of the academic discipline and types of academic work**

Total labor intensity of the discipline is 2 CU (72 AH)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of educational work | Labor intensity | | Labor intensity by semester (AH) | |
| volume in credit units (CU) | volume in academic hours (AH) |
| semester 1 | semester 2 |
| **Classroom work, including** | **1,2** | **44** | **22** | **22** |
| Lectures (L) | 0,3 | 10 | 4 | 6 |
| Laboratory practicum (LP)\* | ***FSES are not provided*** | | | |
| Practicals (P) | 0,9 | 34 | 18 | 16 |
| Seminars (S) | ***FSES are not provided*** | | | |
| Student’s individual work (SIW) | **0,8** | **28** | **14** | **14** |
| Mid-term assessment | ***FSES are not provided*** | | | |
| **CREDIT** |  |  |  |  |
| ***TOTAL LABOR INTENSITY*** | ***2*** | ***72*** | ***36*** | ***36*** |

**5. Sections of the academic discipline and competencies that are formed**

|  |  |  |
| --- | --- | --- |
| № | Competence code | Section name of the discipline |
| 1. | UC-1 | Biomechanics. Physical properties of biomembranes. |
| 2. | UC-1 | Biophysics of the processes of formation of biopotentials. Ion channels. Active and passive transport through membranes. Modeling of biophysical processes. |
| 3. | UC-1 | Molecular physics, thermodynamics. |
| 4. | UC-1 | Optics, microscopy methods. |
| 5. | UC-1 | Quantum biophysics. |