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

**« mathematics»**

(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 the competencies of UC-1, GPC -1, consisting in the formation of students' ability to carry out a critical analysis of problem situations based on a systematic approach, develop a strategy of actions and the ability to use basic biological, physico-chemical, mathematical methods for the development, research and examination of medicines.

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

**2.1.** The discipline «Mathematics» refers to the core part of Block 1 (B1.E.8) of GEP HE. The discipline is taught in 1 semester/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 UC-1.1.*  Knows: methods of critical analysis and evaluation of modern scientific achievements; basic principles of critical analysis  *ID-2 UС-1.2.*  Able to: gain new knowledge based on analysis, synthesis, etc.; collect data on complex scientific problems related to the professional field; search for information and solutions based on action, experiment and experience | methods of systematic and critical analysis; methods of developing action strategies for identifying and solving a problem situation | apply the methods of a systematic approach and critical analysis of problem situations; develop a strategy of actions, make concrete decisions for its imple-mentation | methodology of systematic and critical analysis of problem situations; methodology of goal setting, determination of ways to achieve it, development of action strategies. |
|  | GPC-1 | Able to use basic biological, physico-chemical, mathematical methods for the development, research and examination of medicines. | *ID-1 GPC-1.4.*  Knows: mathematical and statistical analyses  Able to: apply mathematical processing of data obtained in the development of medicines, as well as in the study and examination of medicines and medicinal plant raw materials. | mathematical and statistical analyses of quantitative and qualitative data characterizing the physical, biophysical, chemical and biochemical state of the drug and the patient's condition after the introduc-tion of the drug into the patient's body; the methodology of ma-thematical processing of the results of the physical characteris-tics of a biological object. | to use the principles of mathematical analysis of the elements of the obtained information, to solve the differential equations necessary for the creation and forecasting of mathematical models; to estimate the errors of a series of repeated measurements of physical reality; to implement statistical information, the work of experimental data, using null and alternative hypotheses, parametric and non-parametric criteria, correlation regression and variance analyses, calculate the basic charac-teristics of time series and predict the behavior of the system. | abstract thinking methodology for making conclusions about the results of measurements of the physical characteristics of biological objects and mathematical processing of the data obtained;  the method of solving differential equations,  necessary for the compilation and forecasting of mathematical models;  the main statistical methods for evaluating measurement results. |

**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 (AH) in semesters |
| volume in credit units (CU) | volume in academic hours (AH) |
| 1 |
| **Classroom work, including** | **1, 2** | **44** | **44** |
| Lectures (L) | 0,3 | 10 | 10 |
| Laboratory practicum (LP) | 0,9 | 34 | 34 |
| Practicals (P) | ***FSES are not provided*** | | |
| Seminars (S) | ***FSES are not provided*** | | |
| Student’s individual work (SIW) | **0,8** | **28** | **28** |
| Mid-term assessment | ***FSES is not provided*** | | |
| **CREDIT** |  |  |  |
| ***TOTAL LABOR INTENSITY*** | **2** | **72** | **72** |

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

|  |  |  |
| --- | --- | --- |
| № | Competence code | Section name of the discipline |
| 1. | UC-1, GPC-1 | Fundamentals of mathematical analysis. The simplest differential equations. |
| 2. | UC-1, GPC-1 | Fundamentals of probability theory and descriptive statistics. |
| 3. | UC-1, GPC-1 | Statistical methods of research and data processing. |
| 4. | UC-1, GPC-1 | Mathematical optimization methods. |