**Guidelines for the independent student work (ISW):** The purpose of this type of employment - to gain knowledge, supplementing and securing the lecture material.

Work on the theoretical material, the decision logic and computation tasks that foster skills of self-control, acquisition of new knowledge (self-study) and their use.

**Independent work of student №1** (30 points)  
Deadlines - Week 4

TOPIC: **BIOENGINEERING METHODS**

**PART 1 of the SIW according to the variants, PART 2 is the same for everyone**

**PART 1. ANSWER IN WRITING TO QUESTIONS AND TASKS:**

**1 variant:**

1. Main methods used in Medicine (Example)

2. Types and characteristics of laboratory equipment by purpose: A) general laboratory equipment; B) special laboratory equipment; C) measuring instruments; D) for laboratory research.

3. Illumina sequencing

**2 variant:**

1. Main methods used in Molecular biology (Example)

2. Chose the correct answer of Modern medical equipment: A) Ophthalmology equipment; B) Physiotherapy; C) Environmental equipment D) Life-sustaining

3. Explain X-Ray method using in Medicine

**3 variant:**

1. Explain PCR method.

2. What is general laboratory equipment, examples (at least 10).

3. Types and characteristics of laboratory equipment by purpose: A) general laboratory equipment; B) special laboratory equipment; C) measuring instruments; D) for laboratory research.

**4 variant:**

1. Explain Real-Time PCR method.

2. What is special laboratory equipment. Example.

3. How to analyse results from PCR? Explain

**5 variant:**

1. Explain Sanger-sequencing method.

2. What is laboratory test equipment, example

3. Modern Problems in Molecular biology regarding equipments

**6 variant:**

1. Explain NGS method.

2. What is analytical laboratory equipment, example?

3. Illumina sequencing explanation

**7 variant:**

1. Explain X-Ray method using in Medicine

2. Laboratory equipment can be classified into?

3. How to analyse results from PCR?

**8 variant:**

1. What the differences between PCR and RT-PCR methods

2. Classify medical equipment by purpose and application

3. How to analyse results from Real-Time PCR?

**9 variant:**

1. What the differences between Sanger sequencing and NGS

2. Classify medical equipment by purpose and application.

3. Types and characteristics of laboratory equipment by purpose: A) general laboratory equipment; B) special laboratory equipment; C) measuring instruments; D) for laboratory research.

PART2. Presentation for one of the methods**:**

1. PCR

2. RT-PCR

3. Sequencing

4. NGS sequencing

5. Any, using in medicine

6. ELISA