***The final exam program on the discipline***

*“Programming on Python language”*

*for the 2024/2025 academic year*

*fall semester*

**Faculty of** *\_\_Information Technologies \_\_\_*

**Department** *\_\_\_\_Information Systems \_\_\_*

**Code and name of the educational program** 6B06102 – Information systems

**Department**: *English*

**Level of education:** *Bachelor*

**Course***: 3*

**Teacher:** *Vladislav Karyukin*

**The form of the final control** is \_\_*oral* \_\_

**Exam format –** *offline*

***THEMATIC PROGRAM OF THE DISCIPLINE BASED ON THE TOPICS OF MODULES, LECTURES, SEMINARS***

1. Introduction to Python
2. Python programming
3. Variables, expressions and statements
4. Conditional expressions
5. For and while loops
6. Implementation of random number generation operations
7. Creating functions that return values
8. Performing operations on lists
9. Getting data from files, writing new texts to a file
10. Implementing a сounter Using a DateTime Object
11. Implementation of programs using multiple classes and objects
12. Operations with NumPy
13. Creating DataFrames Using the Pandas Library
14. Plotting visuals using the Matplotlib library
15. Python Applications with PostgreSQL

***METHODOLOGICAL INSTRUCTIONS FOR COMPLETING THE FINAL TEST ASSIGNMENT ACCORDING TO THE SELECTED FORM***

**Standard exam:** *oral*

**The exam format is** *offline* **.**

Total number of examination questions for the discipline: 40

This form is intended for final assessment in disciplines that develop the student's skills in presenting answers and proofs of positions orally, conducting discussions with the examination committee, substantiating their point of view, providing arguments and reasons, and contribute to the development of the student's communicative competence. This form allows for direct contact between the examination committee and the student, during which the student demonstrates the level of mastery of the educational material. Completion of practical tasks on hardware/software development involves the use of computers, laboratory equipment for assembling and launching hardware modules.

An individual survey involves students' detailed, coherent answers to a question related to the studied educational material, so it serves as an important means of distinguishing students' speech, memory, and thinking. To make such a test more profound, it is necessary to ask students questions that require a detailed answer. The questions must be clear, precise, specific, capacious, and have an applied nature.

– The main goal is to learn the concepts of language Python programming, as well as understanding of their practical implementation by solving real problems of varying complexity. The results are knowledge of the Python programming language , data types , operations, input/output features, built-in collections: tuples, lists, dictionaries and sets, libraries NumPy , Pandas and Matplotlib .

* Writing on answer sheets and answering questions orally

***MAIN STAGES OF WORK ACCORDING TO THE INSTRUCTIONS***

**Duration**

Preparation time: 20 minutes

Response time: 15 minutes.

The examination ticket contains 3 questions: 2 questions on theory, 1 question practical task. Each question has the corresponding maximum grade indicated in brackets, as a percentage.

*Organization of an oral offline exam*

- when entering the exam room, the student must provide the examiner with an identity card and sign the attendance sheet;

- it is prohibited to insert and/or change places, leave the auditorium before completing your answer to the ticket during the exam;

- during an oral examination, the examinee chooses the examination ticket;

- at the invitation of the teacher, the student receives an examination ticket in turn;

- if necessary, there will be an opportunity to prepare for answering the questions on the exam ticket during preparation. And if the student is fully prepared for the questions on the exam ticket, he can answer immediately;

- the examiner has the right, in order to more deeply determine the level of knowledge of the student, to ask him additional questions, as well as to offer tasks and examples within the framework of the questions on the examination ticket.

**Requirements for passing the exam:**

- according to the schedule;

- you can answer questions in any order.

- if it is discovered that unauthorized materials have been used or that students have received other hints, the exam may be cancelled.

***ASSESSMENT POLICY – ASSESSMENT GUIDE***

**Template: CRITERIA ASSESSMENT LIST FOR FINAL CONTROL**

*(for standard oral/written forms)*

**Discipline**: *Programming on Python language*. Format **:** Orally **. Platform:** Offline

|  |  |  |
| --- | --- | --- |
| **No.** questions  | **Score**  **Criterion**  | **DESCRIPTORS**  |
| **"Great"**   | **"Fine"**    | **"Satisfactorily"**    | **"Unsatisfactory"**    |
| **90-100** % | **70-89** % | **50-69** % | * 1. %
 | **0-24** % |
| **1-2** | Knowledge and understanding of the theory and concept of the course | The questions are answered comprehensively, substantiated, illustrated with visual examples where necessary; The answers are presented in competent scientific language, all conceptsPython programming language , data types , operations, input/output features, built-in collections: tuples, lists, dictionaries and sets, libraries NumPy , Pandas and Matplotlib | The questions were answered generally correctly, but with some inaccuracies that were not of a fundamental nature. Not all conceptsPython programming language , data types , operations, input/output features, built-in collections: tuples, lists, dictionaries and sets, libraries NumPy , Pandas and Matplotlib are used correctly, there are some incorrect statements and grammatical/stylistic errors in presentation. The answers are not illustrated with examples to the required extent. | The answers to the questions are abstract character, correct conclusions alternate with incorrect ones. Substantive concepts are missedPython programming language , data types , operations, input/output features, built-in collections: tuples, lists, dictionaries and sets, libraries NumPy , Pandas and Matplotlib , which are required forfull disclosure of the topic.The student in generalis knowledgeable about the subject mattercourse of study, buthas problems withdisclosure of specificquestions. | The answers are notcorrespondcontent of the questions.Key for the educationalcourse of the concept,contained in the questions are interpretedwrong. | Answers to questionsabsent;ignorance detectedor misunderstandingstudent of more orthe most important parteducational material.Violation of rulesconducting the finalcontrol. |
| **3** | Evaluation and analysis of the applicability of the selected methodology to the proposed practical task, justification of the obtained result | The ability to integrate, validate and analyze methods and technology on a specific topic of programming in Python , structure the answer, the answers are illustrated with examples and visual materials, writing code, demonstrates the ability to conduct a dialogue and engage in scientific discussion. | Integration and analysis of the application of methods and technology of the course withfollowed by the use of visual aids to reinforce your reasoning through conceptsPython programming language , data types , operations, input/output features, built-in collections: tuples, lists, dictionaries and sets, libraries NumPy , Pandas and Matplotlib with the admission of minor errors in the reproduction of knowledge; analyze the direction on the question of the examination ticket. | Superficial justification of conceptsPython programming language , data types , operations, input/output features, built-in collections: tuples, lists, dictionaries and sets, libraries NumPy , Pandas and Matplotlib , weak application of the main volume of material in accordance with the training program with difficulties in its independent reproduction and the requirement for leading questions. | Lack of justification and analysis of the application of the methods and technology of the course, manifestation of difficulty in providing answers to questions of a reproductive nature. | Lack of ability to apply the course methodology when giving examples and using visual materials;Violation of the Rules for conducting final control. |

***LIST OF USED SOURCES***

1. Python for Everybody: Exploring Data in Python 3 by Dr. Charles Russell Severance, Sue Blumenberg , Elliott Hauser , Aimee Andrion , 2016.
2. Python Cookbook: Recipes for Mastering Python 3 3rd Edition, Kindle Edition by David Beazley , Brian K. Jones , 2013.
3. Advanced Python Development: Using Powerful Language Features in Real-World Applications 1st ed. Edition by Matthew Wilkes , 2021.
4. Learning Python 5ed: Powerful Object-Oriented Programming, Mark Lutz, 2013.
5. Fluent Python: Clear, Concise, and Effective Programming, Luciano Ramalho , 2015.
6. Natural Language Processing with Python and spaCy : A Practical Introduction, Yuli Vasiliev , 2021
7. Learning Scientific Programming with Python, Christian Hill, 2021