***Final control program for the discipline***

***"Programming languages"***

***for the 2023/2024 academic year***

*spring semester​*

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

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

**Code and name of the educational program** “6B06301 Information security systems”

**Department**: *English*

**The level of education** *bachelor*

**Course***: 1*

**Teacher**: *Vladislav Karyukin*

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

**Exam format is** *offline*

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

1. Introduction to Python
2. Programming in Python
3. Conditional expressions
4. Loops and iterations
5. Lists, tuples, dictionaries
6. Strings, files
7. Datetime objects
8. Classes and objects
9. Regular expressions
10. Operations with NumPy
11. Operations with Pandas
12. Operations with Matplotlib
13. Python and Relational Databases
14. Data visualization in Python
15. Django Framework

***METHODOLOGICAL INSTRUCTIONS FOR COMPLETING THE FINAL CONTROL TASK ACCORDING TO THE CHOSEN FORM***

**Standard exam:** *oral*

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

About the total number of exam questions in the discipline: 15

This form is intended for final control in disciplines that develop the student’s skills to present answers and evidence of positions orally, conduct discussions with the examination committee, justify their point of view, give arguments and reasons, and contribute to the development of the student’s communicative competence. This form allows you to establish direct contact between the examination committee and the student, during which the student demonstrates the level of mastery of the educational material. Carrying out practical tasks in hardware/software development involves the use of computers and laboratory equipment to assemble and run hardware modules.

An individual survey requires detailed, coherent answers from students to a question related to the educational material being studied, therefore it serves as an important means of distinguishing students’ speech, memory, and thinking. To make such a test more in-depth, it is necessary to pose questions to students that require a detailed answer. Questions must be clear, precise, specific, succinct, and of an applied nature.

- purpose and expected results of the task

- the purpose – tasks focus on learning the concepts of the Python programming language and understanding its practical implementation by solving real-world problems of varying complexity.

expected results – creation of basic and advanced programs in Python, understanding the features and concepts of classes, objects, and other object-oriented programming paradigms, developing programs for data visualization in Python, creation of web applications

- form of presentation of the completed task (templates/structures, etc.)

Extended oral answers to the questions and presentation of programming code

***MAIN STEPS OF WORK ACCORDING TO INSTRUCTIONS***

**Duration**

Preparation time is 20 min

The time to answer is 15 min

The exam card contains 3 questions: 2 theory questions and 1 practical question. The corresponding maximum score is indicated in parentheses for each question and expressed as a percentage.

*Organizing an offline oral exam*

- upon entering the exam room, the student is required to provide the examiner with an identification card and sign the appearance form;

- inserting and/or changing places, leaving the audience before completing your answer to the ticket during the exam is prohibited;

- during an oral examination, the exam ticket is chosen by the examinee himself;

- at the invitation of the teacher, the student receives an examination ticket one by one;

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

- the examiner has the right, in order to more deeply clarify the student’s level of knowledge, to ask him additional questions and offer tasks and examples within the framework of the questions on the exam card.

**Requirements for passing the exam:**

- according to the schedule ;

- You can answer questions in any order.

- if it is discovered that unauthorized materials are being used or that students are receiving other tips, the exam may be canceled.

***GRADING POLICY – GRADING RUBRICATOR***

**Template: RUBRICATOR FOR CRITERIA ASSESSMENT OF FINAL CONTROL**

*(for standard oral/written forms)*

**Discipline:** Programming languages. **Form:** oral offline **Platform:** IS Univer

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.**  question | **Point**    **Criterion** | **DESCRIPTORS** | | | | |
| **"Great"** | **"Fine"** | **"Satisfactorily"** | **"Unsatisfactory"** | |
| **90-100** % | **70-89** % | **50-69** % | * 1. % | **0-24** % |
| **1-2** | Knowledge and understanding of course theory and concepts | The questions are answered comprehensively, justified, and illustrated with clear examples where necessary; the answers are presented in literate scientific language, and all commands and, tools and concepts of the Python programming language are used correctly and explained correctly. | The questions were generally answered correctly but with some inaccuracies that are not of a fundamental nature. Not all commands and tools of the Python programming language are used correctly; there are some incorrect statements and grammatical/stylistic errors in the presentation. The answers are not adequately illustrated with examples. | Answers to questions are abstract characters; correct conclusions alternate with incorrect ones. Content blocks of the Python programming language required for  full disclosure of the topic.  Student as a whole  oriented to the topic  training course, but  has problems with  disclosure of specific  questions. | The answers are not  correspond  content of questions.  Key for educational  concept course,  contained in the questions are interpreted  wrong. | Answers on questions  absent;  ignorance revealed  or misunderstanding  student greater or  the most important part  educational material.  Breaking the rules  holding the final  control. |
| **3** | Evaluating and analyzing the applicability of the chosen method to the proposed practical problem, justifying the result obtained | The ability to integrate, validate and analyze methods and technologies on a specific topic, programming in Python, structuring the answer, illustrating with examples and visual materials, and writing code demonstrates the ability to conduct a dialogue and engage in scientific discussion. | Integration and analysis of the application of course methods and technology with  subsequent use of visual materials to reinforce your reasoning through the use of commands and language operators programming​ Python with minor errors when reproducing knowledge; analyze the direction on the exam question. | Superficial justification of language commands and operators programming​ Python, poor application of the main body of material in accordance with the training program with difficulties in reproducing it independently and the requirement of leading questions; | Lack of validity and analysis of the application of methods and technology of the course, difficulty in providing answers to questions of a reproducing nature. | Lack of ability to apply the course methodology when giving examples and using visual materials;  Violation of the Rules for final control. |

***REFERENCE LIST***

# Python for Everybody: Exploring Data in Python 3 by Dr. Charles Russell Severance, Sue Blumenberg, Elliott Hauser, Aimee Andrion, 2016.

# Python Cookbook: Recipes for Mastering Python 3 3rd Edition, Kindle Edition by David Beazley, Brian K. Jones, 2013.

# Programming in C# for beginners. Basic information. Alexey Vasiliev, 2018.

# C# 7 programming language and .NET and .NET Core platforms. Andrew Troelsen , Philip Jepix , 2022.

# Learning Python 5ed: Powerful Object-Oriented Programming, Mark Lutz, 2013.

# Fluent Python: Clear, Concise, and Effective Programming, Luciano Ramalho, 2015.

1. Natural Language Processing with Python and Spacy: A Practical Introduction, Yuli Vasiliev, 2021
2. Learning Scientific Programming with Python, Christian Hill, 2021