

Faculty: FACULTY OF TELECOMMUNICATIONS AND MANAGEMENT

Department: INFORMATION TECHNOLOGIES

Professional Field: 5.3 COMMUNICATION AND COMPUTER TECHNOLOGY

Specialty: CYBER SECURITY OF COMMUNICATION TECHNOLOGIES

Educational-qualification degree: BACHELOR

LEARNING COURSE DESCRIPTION

1.Course title: Programming practice

2.Course code: B.43.015.2

3.Type of the course: elective

4.Level: bachelor

5.Year of study: 1

6.Semester: 2

7.Number of credits:3

8.Name of the lecturer: Assist. Prof. Strahil Sokolov, Eng. PhD

9.Course learning outcomes:

The aim of the course is to give students a systematic theoretical and practical knowledge of the role of programming using programming languages and platforms in software development. Students who complete their course must have the skills to work with blockchain-based systems and practical skills to work with decentralized applications.

Students who have completed their training in the discipline must acquire:
Basic knowledge of:

- algorithms
- programming languages
- software platforms
- testing of software applications

Practical skills for

- Work with modern infrastructure for software development
- Software design

Competencies: Upon successful completion of the course students should be able to:

- know the basic tasks and principles of programming;
- know the environment for software development;
- know basic algorithms and software platforms.

10.Teaching methods:

The method of teaching is through lectures, block or one lesson per week for 15 weeks and practical exercises in block or one lesson per week for 15 weeks.

11. Prerequisites:

Students should have prior knowledge of programming basics, cryptography, computer architectures and computer networks.

12. Course contents:

The discipline explores an Introduction to the course Programming Practice. Introduction to programming and scripts. Numeric data types. String data types. Functions, parameters and variables.

Implementation of algorithms. Logical control of the program. Conditional constructions. Methods and modules. Data and list management. Cyclic and repetitive statements. Basic programs and entry points. File processing - Read and write. Object-oriented programming. GIS data processing. Numerical data types and variables. Data types and string functions. Conditional constructions and logic management. Data lists and loops. Basic programs and file processing. Procedural and object-oriented programming, classes and work with instances, rewrite methods. Polymorphism, import of an internal module, as well as external modules in code. Creating software packages and their use. Working with the Lambda function in python. Creating unit tests. Use of functions, modules and external packages. Troubleshooting. Algorithms and data structures: Stack, queue, tree, ordered list. Regular expressions, multithreaded programming, security and exception handling. Recursion. Choice of strategy for algorithm implementation. Determining complexity. Working with graphs. Image processing and computer graphics.

13. Bibliography

Basic literature:

1. Allen B. Downey , “ Think Python: How to Think Like a Computer Scientist”, Second Edition, Updated for Python 3, Shroff/O’Reilly Publishers, 2016.
2. Sahoo, Reeta, and Gagan Sahoo. Computer science with python. New Saraswati House India Pvt Ltd, 2016.
3. Guzdial, Mark, and Barbara Ericson. Introduction to computing and programming in python. New York, NY: Pearson, 2016.
4. David M. Baezly “Python Cookbook” O’Reilly Media; Third edition (June 1, 2013) by. <http://www.edx.org>

Additional literature:

1. Zelle, John M. Python programming: an introduction to computer science. Franklin, Beedle & Associates, Inc., 2004.
2. David M.Baezly “Python Essential Reference”. Addison-Wesley Professional; Fourth edition, 2009.
3. Shroff “Learning Python: Powerful Object-Oriented Programming; Fifth edition, 2013.
4. Lambert, Kenneth A., and Martin Osborne. Fundamentals of Python. Delmar Learning, 2011.

14. Assessment methods and criteria:

The course ends with an ongoing assessment.

1. Requirements for the assessment of the six-point system

The total number of points from the written exam that can be reached is 100. Each of the questions in the final exam carries 3 points, and the answer to the open question can carry up to 10 points.

2. Formation of the final mark

The formation of the final grade is carried out on the basis of a point system as the maximum number of points that students can receive is 100 and can include various activities.

Forming an assessment in the training course at each of the above stages, according to the points obtained and their ranking according to the six-point system is given in Table 1.

Table 1.

Number of points	Assessment According to the 6-pointScale System
0 – 20	Fail 2 (F)
20 – 39	Fail 2 (FX)
40 – 49	Satisfactory 3.00 (E)
50 – 59	Satisfactory 3.00 (D)
60 – 69	Good 4.00 (C)
70 – 84	Very good 5.00 (B)
85 – 100	Excellent 6.00 (A)

15. Language of instruction: Bulgarian/English