1862
RĪGAS TEHNISKĀ UNIVERSITĀTE

RTU Course "Python Programming Language"

12308 null

General data

Code	DIP720
Course title	Python Programming Language
Course status in the programme	Compulsory/Courses of Limited Choice; Courses of Free Choice
Responsible instructor	Aleksejs Jurenoks
Academic staff	Valdis Saulespurēns
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN
Annotation	In the study course students are introduced to the possibilities of the programming language Python and the principles of software development. The study course provides an introduction to the programming language Python and its use in solving practical tasks. The study course covers the stages of software development, program structure, cyclic constructions, functions, procedures, arrays, symbol strings, text files, objects, as well as the use of libraries to solve specialization-related tasks. The course also covers the use of Python modules, which allow you to add to the functionality of the programming language by reducing software development time and program code length. Upon completion of the study course, students will gain knowledge and practical experience that will allow them to use Python to solve typical tasks in their specialty.
Goals and objectives of the course in terms of competences and skills	The aim of the study course is to provide the basics of programming in Python and the possibilities of its use for solving various tasks related to the field of study. Tasks of the study course: * to ensure mastering of software development stages; * to ensure the mastering of the principles of Python language syntax, construction, and program structure; * to ensure the acquisition of input data control, information integrity checks, task automation basics and user interface design; * to ensure the acquisition of the possibilities of using external resources for solving certain tasks.
Structure and tasks of independent studies	During the lecture, the lecturer introduces theoretical concepts and tools for their practical implementation. At the end of each lecture, the lecturer gives students a task for practical implementation. Students start the practical realization of this task after the lecture in the nearest laboratory work. Students will perform exercises and independent tasks using development environments designed for specific tasks.
Recommended literature	Dr. Charles Russell Severance. Python for Everybody: Exploring Data in Python 3 2016 Al Sweigart. Automate the Boring Stuff with Python, 2nd Edition: Practical Programming for Total Beginners 2019 Brian Kokensparger. Guide to Programming for the Digital Humanities: Lessons for Introductory Python 2018 Programmatūras inženierijas katedra. Digitālie lekcijas mācību materiāli tiešsaistē 2020
Course prerequisites	Basic computer skills.

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Introduction to Programming and Python. Help, documentation, settings.	2	3	0	0
Code repositories, Git, GitHub, text editors.	2	3	0	0
Variables, data types.	2	3	0	0
Flow control - branching, optional constructions, cycles - while, for.	2	3	0	0
Data structure list, sets, operations, syntax.	3	5	0	0
Text data, dictionaries, methods for working with dictionaries.	3	4	0	0
Functions.	2	3	0	0
Classes, modules, use of external libraries.	2	3	0	0
Text data processing.	2	3	0	0
Use of web data, JSON, receiving information from services.	2	3	0	0
Language processing libraries.	2	3	0	0
Visualization libraries.	2	3	0	0
Stylometric analysis.	2	3	0	0
Online data analysis (social networks).	2	3	0	0
Larger programs structuring.	2	3	0	0
Total:	32	48	0	0

Learning outcomes and assessment

Learning outcomes	Assessment methods
Able to understands the syntax of the programming language and the principles of program structure.	Laboratory works.
Able to create linear and cyclic programs using software development environments.	Laboratory works.
Able to understands the possibilities and peculiarities of using the programming language Python for solving various tasks related to the field of study.Is able to choose the necessary libraries to perform the specified tasks.	Laboratory works.
Able to demonstrate theoretical and practical knowledge of the possibility of using the programming language Python, is able to develop a program for solving certain tasks, is able to process external data.	Defense of practical work. Writing an exam.

Evaluation criteria of study results

Criterion	%
Attendance / activity	10
Laboratory works	60
Exam / Final project	30
Total:	100

Study subject structure

Part	CP	Hours per Week			Tests			Tests (free choice)		
		Lectures	Practical	Lab.	Test	Exam	Work	Test	Exam	Work
1.	2.0	1.0	0.0	1.0		*		*		