

Introduction to Programming with Python

Module Code: DLBDSIPWP

Module Type see curriculum	Admission Requirements none	Study Level BA	CP n/a	Student Workload 150 h
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Semester / Term see curriculum	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Dr. Cosmina Croitoru (Introduction to Programming with Python)

Contributing Courses to Module

- Introduction to Programming with Python (DLBDSIPWP01)

Module Exam Type

Module Exam

Study Format: myStudies
Exam, 90 Minutes

Study Format: Distance Learning
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Python as a programming language for data science
- Variables and built-in datatypes
- Statements and functions
- Error and exception handling
- Important Python data science modules

Learning Outcomes**Introduction to Programming with Python**

On successful completion, students will be able to

- use fundamental Python syntax.
- recollect common elementary data types.
- recognize foundational programming concepts and their realization in Python.
- understand error handling and logging.
- create working programs.
- list the most important libraries and packages for data science.

Links to other Modules within the Study Program

This module is similar to other modules in the field(s) of Data Science & Artificial Intelligence.

Links to other Study Programs of the University

All Bachelor Programmes in the IT & Technology field(s).

Introduction to Programming with Python

Course Code: DLBDSIPWP01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		n/a	none

Course Description

This course provides students with a foundational understanding of the Python programming language. Following an introductory exposition to the importance of Python for data science-related programming tasks, students will be acquainted with fundamental programming concepts like variables, data types, and statements. Building on this basis, the important notion of a function is explained and errors, exception handling, and logging are explicated. The course concludes with an overview of the most widely-used library packages for data science.

Course Outcomes

On successful completion, students will be able to

- use fundamental Python syntax.
- recollect common elementary data types.
- recognize foundational programming concepts and their realization in Python.
- understand error handling and logging.
- create working programs.
- list the most important libraries and packages for data science.

Contents

1. Introduction
 - 1.1 Why Python?
 - 1.2 Obtaining and installing Python
 - 1.3 The Python interpreter , IPython, and Jupyter
2. Variables and Data Types
 - 2.1 Variables and value assignment
 - 2.2 Numbers
 - 2.3 Strings
 - 2.4 Collections
 - 2.5 Files

3. Statements
 - 3.1 Assignment, expressions, and print
 - 3.2 Conditional statements
 - 3.3 Loops
 - 3.4 Iterators and comprehensions
4. Functions
 - 4.1 Function declaration
 - 4.2 Scope
 - 4.3 Arguments
5. Errors and Exceptions
 - 5.1 Errors
 - 5.2 Exception handling
 - 5.3 Logs
6. Modules and Packages
 - 6.1 Usage
 - 6.2 Namespaces
 - 6.3 Documentation
 - 6.4 Popular data science packages

Literature

Compulsory Reading

Further Reading

- Barry, P. (2016). Head first Python: A brain-friendly guide. Sebastopol, CA: O'Reilly Media, Inc.
- Kapil, S. (2019). Clean Python: Elegant coding in Python. Berkeley, CA: Apress.
- Lubanovic, B. (2019). Introducing Python (2nd ed.). Sebastopol, CA: O'Reilly.
- Lutz, M. (2013). Learning Python (5th ed.). Sebastopol, CA: O'Reilly.
- Matthes, E. (2015). Python crash course: A hands-on, project-based introduction to programming. San Fransisco, CA: No Starch Press.
- Müller, A. C., & Guido, S. (2016). Introduction to machine learning with Python: A guide for data scientists. Sebastopol, CA: O'Reilly Media, Inc.
- Ramalho, L. (2015). Fluent Python: Clear, concise, and effective programming. Sebastopol, CA: O'Reilly.

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints®	<input type="checkbox"/> Review Book
<input checked="" type="checkbox"/> Course Book	<input type="checkbox"/> Creative Lab
<input type="checkbox"/> Vodcast	<input type="checkbox"/> Guideline
<input checked="" type="checkbox"/> Shortcast	<input checked="" type="checkbox"/> Live Tutorium/Course Feed
<input checked="" type="checkbox"/> Audio	<input type="checkbox"/> Reader
<input checked="" type="checkbox"/> Exam Template	<input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
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