Course Syllabus

Code - Course Title	**BVA101 - Foundations of Programming**
Course Type	I. SEMESTER
Laboratory + Practice	3+0
ECTS	**3.0**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	ÖĞR. GÖR. DR. HANDE TİRYAKİ

Mode of Delivery	Face to Face
Prerequisites	There are no prerequisites.
Courses Recomended	It is not available.
Recommended Resources	It will be announced later.
Work Placement	It is not available.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Introduction to Programming: What is an algorithm, why is it important, explanation with real-life examples. Installing Python. Preparing the work environment. Simple “Hello Python” example.	
Week - 2		Basic Data Types and Operators: Introduction to int, float, string, and boolean data types. Type conversions. Explanation of arithmetic, comparison, and logical operators with practical examples.	
Week - 3		Conditional Statements: Establishing the program's decision-making mechanism with if-else structures. Complex conditions using comparison and logical operators. Nested conditions. Mini applications.	
Week - 4		Loops I: Repeating operations with for and while loops. Example applications.	
Week - 5		Loops II: Using range, enumerate, break, and continue. Example applications.	
Week - 6		Data Structures: Lists, tuples. Basic operations: insertion, deletion, sorting, slicing. Application areas and performance differences. Dictionaries (dict) and nested data structures. Key-value logic.	
Week - 7		General Methods: Mathematical methods and chain methods. Examples of use.	
Week - 8		Functions: Function definition, parameters, and return values. Default parameters. Calling by value and by reference. Examples of real-life function applications.	
Week - 9		File Operations: Opening/reading/writing files (txt, CSV). Secure file operations using the with statement. Reading and writing data from CSV files.	
Week - 10		Errors and Exceptions: try-except structure, multiple except blocks. finally block. Custom error messages. Real-life example: Catching errors when a file cannot be found.	

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 11		Introduction to Object-Oriented Programming: The concepts of class and object. Method, property, inheritance. Encapsulation and its advantages. Small example: Defining a Student class.	
Week - 12		Modules and Libraries: Standard libraries (math, random, datetime). Package management with pip. Third-party library installation and simple usage examples.	
Week - 13		Python Libraries for Data Analysis: Arrays and basic operations with NumPy. Creating DataFrames, reading and filtering data with Pandas. Simple graphing with Matplotlib.	
Week - 14		A Small Project Data Analysis: Reading, cleaning, analyzing, and presenting data with graphs on a real data set (e.g., traffic or weather data).	

Learning Outcomes

#	Learning Outcome
1	Explains and applies the basic syntax and programming structures (variables, conditions, loops, functions) of the Python language.
2	Effectively uses basic data types and data structures (list, tuple, dictionary, set) in Python.
3	Applies Python correctly in file reading/writing, CSV operations, and data retrieval/storage processes.
4	Develops solutions to problems using basic algorithmic logic (sorting, searching, iteration, decision structures).
5	Performs data preparation processes (cleaning, transforming, filtering) using Python.
6	Performs basic data analysis operations using Python libraries (NumPy, pandas, etc.).
7	Performs basic statistical calculations to interpret data.
8	Applies analytical and algorithmic thinking skills when writing code.
9	Performs basic data preprocessing, analysis, and reporting steps on a real-world dataset.
10	Uses debugging and refactoring techniques.
11	Understands the programming logic required for big data analytics and develops the ability to work with data.
12	Writes more readable and modular code using a basic functional programming approach.
13	Demonstrates the ability to select the correct data structure and algorithm when solving data-driven problems.
14	Can interpret and explain the analysis results prepared with Python.
15	Works in accordance with documentation, code order, and best practice principles in programming processes.

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.