

Course Title: - Python Programming (60 hours)

This course prepares the students for essential knowledge in Python Programming, building a foundation in key concepts, syntax, and control flow. Participants gain proficiency in data manipulation, functions, and file handling. The curriculum introduces object-oriented programming (OOP), effective exception handling, and advanced techniques like list comprehensions. Practical applications and a final project enhance problem-solving skills for real-world scenarios. This course sets the stage for further specialized domains such as Cybersecurity, offering a comprehensive understanding of Python's capabilities and prepares students for Python Certification.

Key Learning Objectives	Course Content	Hours
<p>Module 1: At the end of the module the students will be able to:</p> <ul style="list-style-type: none">➤ Comprehend programming fundamentals.➤ Justify Python's significance.➤ Setup Python environment and IDEs.➤ Execute "Hello, World!" program.	<p>Module 1: Introduction to Programming and Python</p> <ul style="list-style-type: none">• What is programming?• Why Python?• Setting up the Python environment (installation, IDEs)• Your first Python program: "Hello, World!"• Summary and Review• Online quiz test	3
<p>Module 2: At the end of the module the students will be able to:</p> <ul style="list-style-type: none">➤ Grasp variables and diverse data types.➤ Implement arithmetic operations.➤ Manipulate strings and utilize comments.➤ Manage basic input and output operations.	<p>Module 2: Basic Python Syntax and Concepts</p> <ul style="list-style-type: none">• Variables and data types (integers, floats, strings, booleans)• Basic arithmetic operations• Working with strings: concatenation, slicing• Comments and indentation, Basic input and output• Summary and Review• Online quiz test	4

<p>Module 3: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Apply conditional statements. ➤ Assess comparison and logical operators. ➤ Manipulate boolean values and expressions. ➤ Employ loops and their control statements. 	<p>Module 3: Control Flow and Decision Making</p> <ul style="list-style-type: none"> • Conditional statements (if, elif, else) • Comparison operators • Logical operators • Using boolean values and expressions • Loops (while loop, for loop) • Break and continue statements • Summary and Review • Online quiz test 	<p>4</p>
<p>Module 4: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Create, index, and modify lists. ➤ Understand the properties of tuples. ➤ Utilize dictionaries for key-value storage. ➤ Employ sets for unique value storage. 	<p>Module 4: Data Structures</p> <ul style="list-style-type: none"> • Lists: creating, indexing, slicing, modifying • Tuples: creating, immutability • Dictionaries: key-value pairs, methods • Sets: creating, methods • Summary and Review • Online quiz test 	<p>5</p>
<p>Module 5: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Define and call functions. ➤ Examine parameters and return values. ➤ Analyze variable scope within functions. ➤ Differentiate between built-in and user-defined functions. ➤ Introduce the concept of modules and libraries. 	<p>Module 5: Functions and Modules</p> <ul style="list-style-type: none"> • Defining and calling functions • Parameters and return values • Function scope and lifetime of variables • Built-in functions vs. user-defined functions • Introduction to modules and libraries • Summary and Review • Online quiz test 	<p>4</p>

<p>Module 6: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Read from and write to files. ➤ Manage file operations and modes. ➤ Distinguish between text and binary files. ➤ Implement error handling using try-except blocks. 	<p>Module 6: File Handling</p> <ul style="list-style-type: none"> • Reading from and writing to files • Opening and closing files • Text files vs. binary files • Error handling with try-except blocks • Summary and Review • Online quiz test 	5
<p>Module 7: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Understand OOP principles. ➤ Construct classes and objects. ➤ Utilize instance variables and methods. ➤ Explore constructors and destructors. 	<p>Module 7: Introduction to Object-Oriented Programming</p> <ul style="list-style-type: none"> • Understanding classes and objects • Creating classes and objects in Python • Instance variables and methods • Constructors and destructors • Summary and Review • Online quiz test 	4
<p>Module 8: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Grasp exceptions and their nature. ➤ Handle exceptions using try-except blocks. ➤ Implement multiple except blocks. ➤ Understand the finally block's role. 	<p>Module 8: Exception Handling</p> <ul style="list-style-type: none"> • Understanding exceptions • Handling exceptions with try-except blocks • Using multiple except blocks • The finally block • Summary and Review • Online quiz test 	5
<p>Module 9: At the end of the module the students will be able to:</p>	<p>Module 9: Intermediate Concepts</p> <ul style="list-style-type: none"> • List comprehensions 	4

<ul style="list-style-type: none"> ➤ Create concise list comprehensions. ➤ Define and use lambda functions. ➤ Employ map, filter, and reduce functions. ➤ Comprehend generators and iterators. 	<ul style="list-style-type: none"> • Lambda functions • Map, filter, and reduce functions • Generators and iterators • Summary and Review • Online quiz test 	
<p>Module 10: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Explore the role and significance of libraries. 	<p>Module 10: Introduction to Libraries</p> <ul style="list-style-type: none"> • Introduction to Libraries • Summary and Review • Online quiz test 	2
<p>Module 11: At the end of the module the students will be able to:</p> <ul style="list-style-type: none"> ➤ Apply Python skills to address real-world issues in a practical project setting. 	<p>Module 11: Final Project, Certification and Practical Applications</p> <ul style="list-style-type: none"> • Applying Python skills to solve real-world problems • Certification preparation • Summary and Review • Online quiz test 	20