



LAKSHYA INSTITUTE OF TECHNOLOGY

BCA, BSc ITM and BSc CS

Affiliated to Utkal University

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CORE PYTHON SYLLABUS

Introduction to Python

- Introduction
- Python Features
- Python 2.* Vs Python 3.*
- Environment Setup
- Basic Syntax
- Interactive Mode Programming
- Script Mode Programming
- Identifiers
- Reserved Words
- Lines and Indentation
- Multiline Statements
- Quotation in Python
- Comments in Python
- Waiting for the Users
- Multiple Statement Groups as Suites
- Command Line Arguments
- Online Help, help() And dir()
- Output function in Python
- Formatting Output

Strings

- Introduction
- indexing
- Accessing strings
- String Slices
- Operators support by string
- String Methods
- Functions support by string





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CORE PYTHON SYLLABUS

Variables and Data types

- Variable Types
- Assigning values to Variables
- Multiple Assignment
- Data types / Python objects
- Standard Data types
- None, Boolean , Numbers, Strings, Lists, Tuples, Dictionary
- Range , enumerate , array , byte array
- Data type conversion

Operators

- Types of Operator
- Association and precedence
- Arithmetic Operators
- Comparison or Relational Operators / chaining of relational
- Assignment operators
- Logical Operators
- Bitwise Operators
- Membership Operators
- Identity Operators
- Operator's Precedence

Sets

- Creating a Sets
- Membership Testing
- Removing Items
- Iteration over Sets
- Set Operations
- Multiple Sets
- Frozen set





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CORE PYTHON SYLLABUS

Numbers

- Number System
- Typecasting
- Basic Operations
- Number Methods
- Complex number
- Complex data type
- Built-in complex class
- Binary
- Decimal to binary
- F "String"
- Binary to decimal
- Float to Binary
- Binary to Float
- Octal to decimal
- Decimal to Octal
- Hexadecimal to decimal
- Decimal to hexadecimal

Tuples

- Tuple creation
- Tuple Notations
- Packaging and Un-packaging
- Operations on Tuples
- Tuple Attributes
- Conversions
- Uses of Tuples
- Using List Comprehensions to
- Process Tuple Elements
- Tuple methods
- Function supported by tuple





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CORE PYTHON SYLLABUS

Lists

- List Creation
- List Attributes
- Combining Lists
- Getting pieces of Lists(Slices)
- Comparing Lists
- Sorting Lists
- Iteration
- Deleting
- Aggregates
- Copying
- Clearing
- List Methods
- Operators
- Methods of list
- Function supported by list
- List Comprehension

Dictionaries

- Dictionary Notation
- Operation on Dictionaries
- Combining to Dictionaries
- Deleting from Dictionary
- List to Dictionary
- 2D Dictionary

Branches

- if...elif...else statements
- Nested if statement





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CORE PYTHON SYLLABUS

Looping

- Loops
- For Loops
- While Loop
- Else Clause of Loops

Control Statements

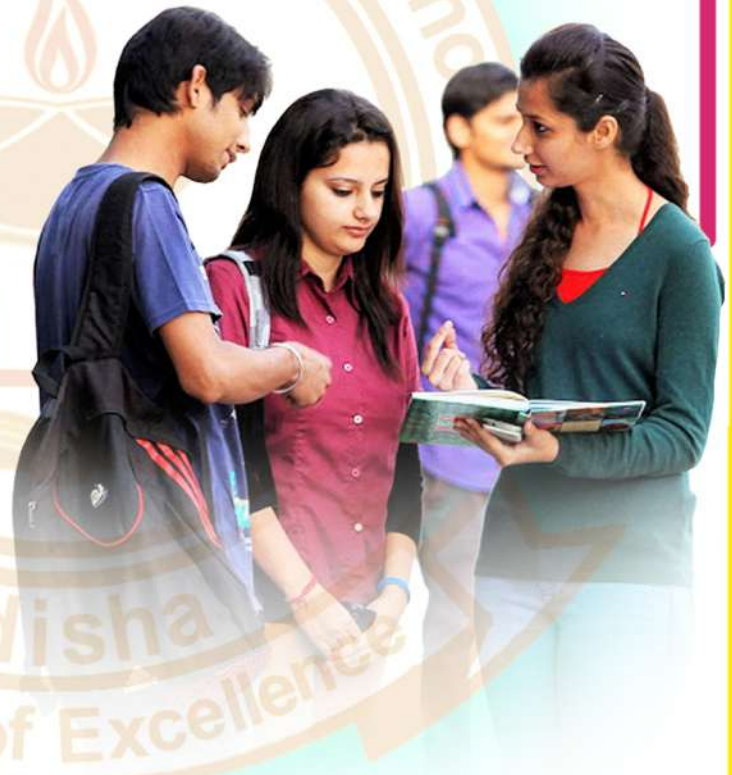
- Breaking
- Continuing
- Pass
- return

Functions

- Defining a Function
- Calling a Function
- Pass by Reference Vs Value
- Function Arguments
- Required Arguments
- Keyword Arguments
- Default Arguments
- Variable-Length Arguments
- The Anonymous Functions
- The Return Statement
- Scope Of Variables
- Global Vs Local Variables
- Pre-define functions
- Single line coding

Command Line Arguments

- Parsing Command-Line
- Argumentsgetopt.getopt Method
- Exception getopt.GetoptError





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CORE PYTHON SYLLABUS

Modules

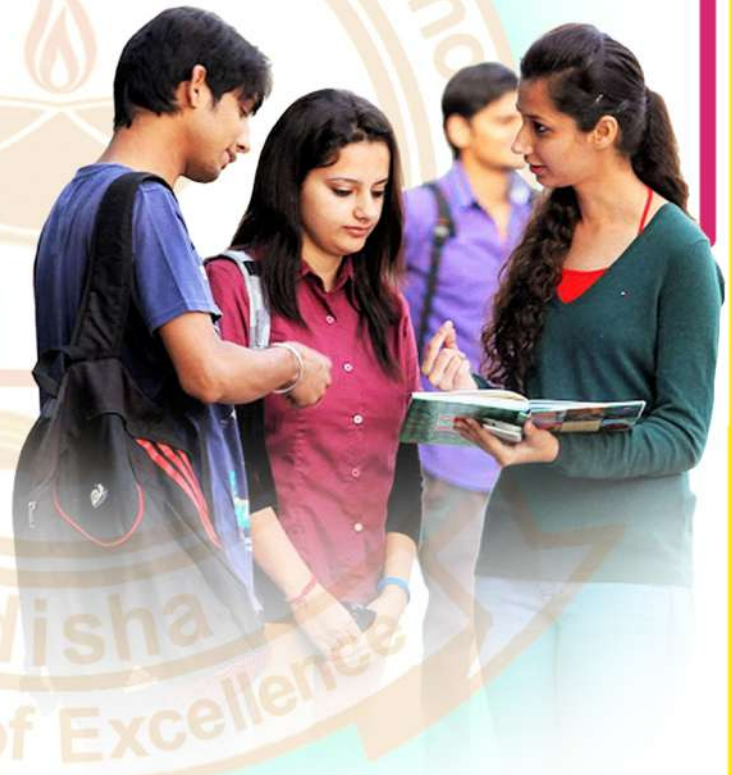
- Importing a Module
- The Import Statements
- Creating a Module from a File
- The from...import Statement
- The from...import * Statement
- Locating Modules
- Namespaces and Scoping
- The dir() Function
- The globals() and locals() Functions
- The reload() Function
- Creating a Module from a Directory
- Packages in Python

Input and Output

- Input()
- File input
- print()
- File Output
- Var_dump
- Print_r
- write

Files

- File I/O
- Testing Files
- Common File Operations
- Finding Files
- Current Directory
- Disk size
- Path





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CORE PYTHON SYLLABUS

Exception Handling

- Assertions in Python
- What is Exception?
- Handling an Exception
- The except clause with no Exceptions
- The except clause with multiple exceptions
- The try-finally Clause
- Argument of an Exception
- Raising an Exception
- Exception Hierarchy

PYTHON OOPS

Python Object Oriented

- Overview of OOP terminology
- Creating class
- Creating instance objects
- Overriding methods
- Base overloading methods
- Overloading operators
- Data hiding
- Type conversion

Argument parser

- Introducing positional arguments
- Introducing optional arguments
- Short options
- Combining positional & optional arguments
- Getting a little more advanced





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PYTHON OOPS

Accessing attributes

- Built-in class attributes
- Destroying objects
- Class inheritance

Date and Time

- What is tick?
- What is time tuple
- Getting current time
- Getting formatted time
- Getting calendar for a month
- The time module
- The calendar module

Multi-Threading

- Starting a new thread
- The threading module
- Creating thread using threading module
- Synchronizing threads
- Multithreaded priority queue

Network Programming

- Sockets
- The socket module
- Server socket methods
- Client socket method
- General socket methods
- Transmission control protocol
- User datagram protocol





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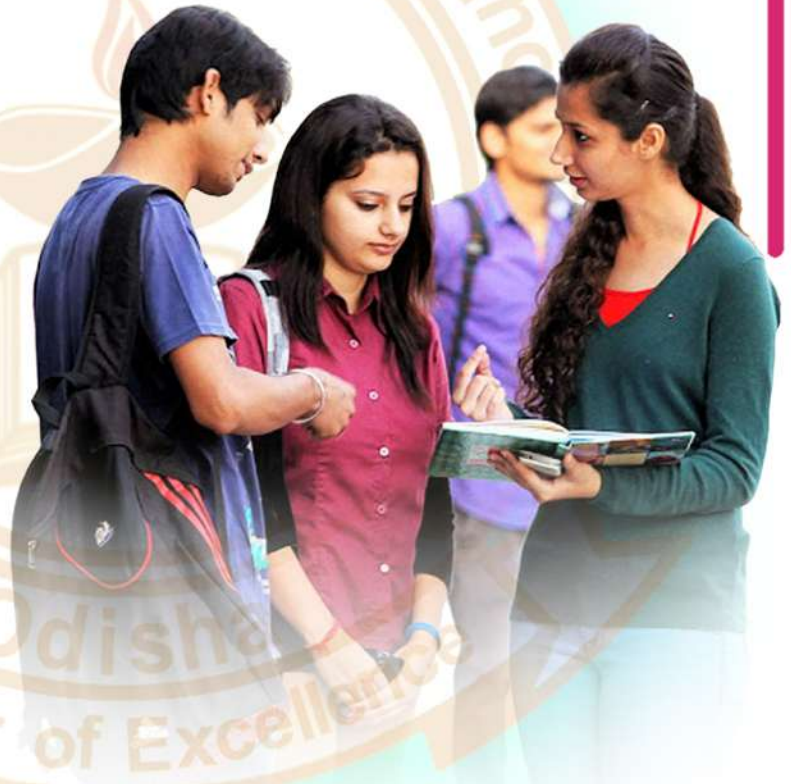
ADVANCE PYTHON

Databases Programming

- What is MySQL?
- Install MySQL
- Database connection
- Creating database table
- Insert operation
- Read operation
- Update operation
- Delete operation
- Performing transactions
- Commit operation
- Rollback operation
- Disconnecting database
- Handling errors

No SQL (MongoDB)

- What is No SQL
- introduction
- create database
- create collection
- insert Document
- find document
- sort
- delete document
- drop collection
- update
- limit & skip





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ADVANCE PYTHON

Graphical User Interface

- Introduction
- What's Tkinter?
- Hello, Tkinter
- Layout management
- Widgets
- Menus & toolbars
- Login page
- Signup page

Data visualization

- Installation of Matplotlib
- Pyplot
- Dot point , Multiple point
- line graph
- Bar , Pie chart
- Box Plot
- Histogram , Scatter plot
- 3d Scatter plot

