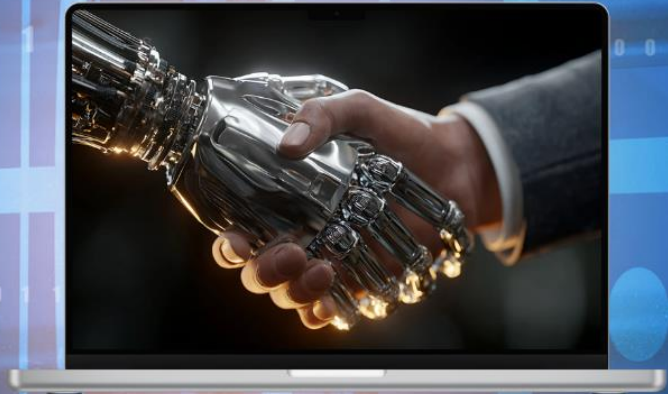




AMA COMPUTER ACADEMY PYTHON SYLLABUS



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Python Syllabus

Topics	Sub-Topics	
Python Introduction	What is Python	
	Python history	
	Versions of Python	
	Features of Python	
	Limitations of Python	
	Scripting language vs programming language	
	Applications of Python	
	Python2 vs Python 3	
	What is Python used for?	
	Flavours of Python	
	Python compared to other languages	
	Python vs Java	
	How Python works? What is byte code and _pycache_?	
	What is PVM	
	Compiler vs interpreter	
	Compile time vs runtime	
	Future Scope of Python and career opportunity	
	Memory Management	What is Memory Management
		Three areas of Memory Management
		Memory management at Hardware level
Memory management at OS level		
Memory management at Application level		
How important is memory management		
What is Memory management in Python		
Python memory allocation - Static memory and Dynamic memory		
2 parts of memory - Stack and Heap		
Garbage collector		
Reference counting in Python		
Transferring the garbage collector		
Importance of Performing Manual Garbage Collection		
C Python Memory Management		
Common Ways to Reduce the Space Complexity		
Installation and basics of Python		Python Installation on windows
		Check Python version on windows
		Verify Python is installed?
	Verify pip was installed?	
	What is IDLE and editors	
	How to run Python program using IDLE	
How to install visual studio		

	Executing Python program
	Identifiers and rules to write identifiers
	Constants and variables
	Keywords or reserved keywords
	Python comments
	Python syntax
	Lines and Indentation
	Python user input
Data types	Text type
	Numeric types
	Sequence type (range vs xrange)
	Mapping types
	Boolean types
	Binary types
	None type
	Type casting
Operators	Arithmetic operators simulation
	Assignment operators simulation
	Comparison operators simulation
	Logical operators
	Identity operators simulation
	Membership operators simulation
	Bitwise operators simulation
	Precedence and Associativity of Operators
	Ternary operator
Flow control statements	What are control flow statements in Python?
	Decision control statements
	Python conditions and indentation
	simple if flow
	if else flow
	nested If flow
	if elif else flow
	elif ladder
	short hand if, if else flow
	Multiple conditions in if using and or operator
	What other languages do? Which one is better?
	Transfer statements
	Break
	Continue
	Pass
	Iterative statement
	For
	While
	Pattern programs
Python Strings	Data types in brief

	How to define string
	How to access string and indexing
	String slicing
	Mutable and immutable
	Mathematical Operators for string (+,*)
	Comparison of string
	String membership
	Format string
	Escape character
	Removing spaces from string
	Finding substring
	Counting substring and len()
	Replacing a string
	Splitting and Joining of string
	Changing case of a string
	Checking starting and ending part of the string
	Methods to check type of characters present in string
	Revision string methods
List	What is list and its creation
	Accessing elements of list
	Mutability and immutability
	List Traversing
	Functions of list - get information about list
	Manipulating list
	Ordering elements of list
	Alterative statement
	Use of mathematical operators for list
	Comparison and membership operators
	Nested list
	List comprehension
Tuple	What is tuple and how to create tuple
	Accessing tuple
	Mathematical Operators for tuple
	Functions of tuple
	Tuple Packing unpacking
	Tuple comprehension
	Difference between list and tuple
Set	SET and its creation
	Important functions of set
	Mathematical Operations on set
	Membership operators
	Set comprehension
	Set won't support slicing and indexing
Dictionaries	Dictionary and its creation

	Accessing dict data
	Updating and deleting dict
	Loop dictionaries
	Important functions of dict
	Dict comprehension and nested dictionaries
Python functions	Functions and its types
	Parameters
	Return statement
	Types of arguments part 1
	Types of arguments part 2
	Types of variable
	Namespaces and Global keyword
	Recursive function
	Nested function
Advance functions	What is anonymous function
	Difference between normal function and anonymous function
	Lambda function in detail
	Filter, map and reduce functions
	Decorators
	Calling decorators
	Decorator chaining
	Generators
	Advantages of Generators
	Generators vs Normal collections wrt performance
	Generators vs Normal collections wrt performance
	Iterators
Module, packages and library	What is Module
	Module aliasing
	Various possibilities of import
	Reloading a module
	Finding members of module by using dir()
	The special variable <code>_name_</code>
	What is package
	init.py
	What is library
	Random module
	Math module
	Python Imaging Library (PIL)
	MoviePy
	pyscreenshot
Date Time module	What is Date Time module and its classes
	Date class and its attributes
	Date class methods
	Time class and its attributes

	Time class and its methods
	DateTime class and its attributes
	DateTime class and its methods
	Timedelta class and its attributes
	Timedelta class and its methods and operations supported
	Tzinfo and timezone class
File handling	File handling basics and types of files
	Opening a file with different modes and closing file
	Various properties of file object
	Writing data and reading data from text file
	The with statement, seek(), tell()
	OS module and working with directories
	OS module functions
	Running other programs from python program
	Handling Binary data
	Handling CSV file
	Zippping unzipping files
Exception Handling	Types of errors
	What is Exception
	Python's Exception handling hierarchy
	Customized try except - with try except, without try except
	Control flow in try except
	Printing exception information
	Try with multiple except blocks
	Single except block can handle multiple exceptions
	Default except block
	Finally block
	Control flow try except and finally
	Nested try except finally
	Else with try except finally
	All possible combinations of try except finally
	Types of exceptions
Python loggers	What is log and log file in programming
	Logging the exception
	Logging levels
	BasicConfig and formatting
	Python logging getlogger
	File handler working with file handlers
	Different logger object
	Classes and functions
	Capturing stack traces
JSON	What is JSON
	JSON to Python and Python to JSON

	Json dumps
	Json loads
	Serializing deserializing
	Pickling unpickling
	Need of pickling and unpickling
Regular expression	What is Reg ex
	Character classes
	Quantifiers
	Important functions of re module
	Symbols
	Web scrapping using reg exp
	Programs related to reg exp
Multi Threading	Multi Threading and its types
	Ways of creating thread in Python
	Difference in program with - without multi threading
	Thread identification number(ident)
	Function/methods on multithreading
	Daemon Threads
	Synchronization
	Difference between lock and semaphore
	Inter thread communication
Object Oriented Programming	What is class
	How to define class
	What is object
	Reference variable
	Self
	Constructor
	Difference between constructor and methods
	Types of variables - instance variable, static variable, local variable
	Types of methods - instance method, setter getter method, class method, static method
	Inner class
	Garbage collectors
	its methods
	Destructor
Inheritance	What is inheritance
	Super class sub class
	Benefits of inheritance
	Creating child class
	Types of inheritance - single inheritance, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance
Polymorphism	What is Polymorphism
	How to use Polymorphism

	Duck typing (philosophy)
	Strong typing and hasattr() function
	Overloading and its types
	Operator overloading
	Method Overloading
	Constructor overloading
	Method overriding
	Constructor overriding
Encapsulation and Abstraction	What is encapsulation
	Why we need encapsulation
	How to achieve encapsulation in Python
	Access modifiers in encapsulation
	Private members
	Public method to access private members
	Name Mangling to access private members
	Protected members
	Public members
	Advantages of encapsulation
	Data Abstraction in Python
	Why abstraction is important
	Abstraction classes in Python
	Abstract base class ABC and its working
Python programming with mysql	What is database
	Python supports various databases
	Why we are using mysql
	mysql driver installation
	Learn to write connector
	Creating connection
	Check connection
	Close connection
	Create database
	Create table
	Primary key
	Foreign key
	CRUD operation
	Close connection
Python mysql	MYSQL INSERT
	Cursor Methods and Execute methods
	MYSQL select
	Fetch methods, row properties rowcount,id
	MYSQL WHERE
	Wildcard characters
	MYSQL ORDER BY
	MYSQL DELETE
	Commit and rollback

	MYSQL drop table
	MYSQL UPDATE
	MYSQL LIMIT
	MYSQL JOIN
	Parameterized query, Tuple parameter,dictionary parameter
Python GUI -tkinter	What is GUI programming?
	Methods while creating the Python application with GUI - TK, mainloop
	Widgets in tkinter application - Button, Canvas, Checkbutton, Entry, Frame, Label, Listbox, Menubutton, Menu, Message, Radio button, Scale, Scrollbar, Text, Toplevel, Spinbox, Pannedwindow
Python collections module	What is the purpose of collection module
	Counters
	Ordered dict
	Default dict
	Chainmap
	Namedtuple
	DeQue
	UserDict
	UserList
	UserString
Python Programs	Calculator
	Password Generator
	Alarm Clock
Web Development using Python	Introduction to Django
	Django Project and App life cycle
	Creating Project and App
	Django Templates and Static
	Django Models
	Django Forms
	Django Views
	Django Sessions and Cookies
	Django Serialization,Deserialization and Mixins
	Django Authentication and Authorization
	Django Middleware
	Send Email in Django and CSV,PDF files and GIT & Github
	Django Rest Framework Introduction
	Django Rest Framework Serializer and Deserializer
	Django Rest Framework Views
	Django Rest Framework Authentication And Authorization
	Django Rest Framework Pagination and Routers
Learn basics of Artificial Intelligence with Python	

Learn basics of Machine Learning with Python	
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Learn Data Science basics with Python	
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