An ISO 9001 :2015 Certified
AiNS COMPUTER INSTITUTE ™

# FULL STACK PYTHON SYLLABUS

## 1. HTML 4 and HTML 5

A. Introduction of HTML
B. Tag, Elements and Attributes
C. Basics syntax
D. Table
E. List
F. Forms
G. Structure of HTML4 and HTML5
H. Semantic and non-semantic tags
I. HTML 5 Features
J. New Input type
K. Forms Attribute
L. SVG
M. Canvas
N. Audio, Video Tag

## 2. CSS (Cascading Style Sheet)

A. Attributes (ID, Class, Style, Title )
B. CSS Types (Inline, Internal, External)
C. Box-model
D. Display Property (Block, Inline, None)
E. Visibility-Hidden
F. Position Property(Static, Relative, Absolute, Fixed )
G. Z-index Property
H. Combinators (Descendant Selector, Child Selector, Adjacent Sibling Selector, General Sibling Selector)
I. CSS Pseudo-classes (Link, Visited, Hover, Active)
J. CSS Pseudo-elements (First Line, First Letter, Before, After ,Selection)
K. Static Web Page
L. Viewport Meta tag

## 3. CSS 3

A. Background, Multiple Backgrounds
B. Font Related Features (online fonts)
C. Text-Effect and Box-Effect
D. Gradients-Linear and Radial
E. Transition
F. Transformation
G. Animation
H. Media Queries

## 4. Bootstrap

A. Introduction of Bootstrap (Responsive)
B. Typography
C. Tables
D. Images, Buttons
E. Grid Structure-Type of columns
F. Forms
G. Jumbortron,
H. well
I. Panel
J. Navbar, Nav Tab
K. Carousel
L. Responsive Web Page

## 5. JavaScript

A. Introduction of JavaScript
B. Use of JavaScript
C. Variables
D. Keywords
E. Data Type (Primitive, non-primitive)
F. JS Conditions (if, if-else)
G. Conditional operators & logical operators
H. Loops (for, while, do-while)
I. Switch Case
J. Functions
K. SetTimeout and set Interval Function
L. HTML DOM
M. Use the document object to access and manipulate HTML
N. Changing HTML Elements
O. Adding and Deleting Elements
P. Array
Q. Objects
R. How to access Objects (Dot Notation, bracket Notation)
S. Object Creation (Empty Object, Literal Way, Constructor Way)
T. Prototype
U. Validations
V. Events

## 6. jQuery

1. Introduction
A. JQuery Library
B. First JQuery Example
C. The Document Ready Function
D. How to escape a special character
2. Selectors
A. Basic selectors
B. Precise Selectors
C. Combination of Selectors
D. Hierarchy Selectors
E. Selection Index Filters
F. Visibility Filters
G. Forms Selectors
H. Forms Filters
3. Find Dropdown Selected Item
4. Document Traversal
A. Getting a specific DOM element
5. Event
A. Events Helpers
B. Attach Event
C. Detaching Events
D. Events Triggering
6. HTML Manipulation
7. AJAX with jQuery
8. Use and Benefits JSON
9. Overview of AngularJS

# Syllabus Python

## Session 1: Introduction to Python

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- What are Python and the history of Python?
- Unique features of Python
- Python-2 and Python-3 differences
- Install Python and Environment Setup
- First Python Program
- Python Identifiers, Keywords, and Indentation
- Comments and document interlude in Python
- Command-line arguments
- Getting User Input
- Python Data Types
- What are the variables?
- Python Core objects and Functions
- Number and Maths
- Week 1 Assignments

## Session 2: Control Statements

- If-else
- If-elif-else
- while loop
- for loop
- Break
- Continue
- Assert
- Pass
- return

## Session 3: List, Ranges & Tuples in Python

- Introduction
- Lists in Python
- More about Lists
- Understanding Iterators
- Generators, Comprehensions and Lambda Expressions
- Introduction
- Generators and Yield
- Next and Ranges
- Understanding and using Ranges
- More About Ranges
- Ordered Sets with tuples

## Session 4: Python Dictionaries and Sets

- Introduction to the section
- Python Dictionaries
- More on Dictionaries
- Sets
- Python Sets Examples

## Session 5: Input and Output in Python

- Reading and writing text files
- Writing Text Files
- Appending to Files and Challenge
- Writing Binary Files Manually
- Using Pickle to Write Binary Files

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## Session 6: Python built-in function

- Python user-defined functions
- Python packages functions
- Defining and calling Function
- The anonymous Functions
- Loops and statement in Python
- Python Modules & Packages

## Session 7: Python Object Oriented

- Overview of OOP
- The self variable
- Constructor
- Types Of Variables
- Namespaces
- Creating Classes and Objects
- Inheritance
- Types of Methods
- Instance Methods Static Methods Class Methods
- Accessing attributes
- Built-In Class Attributes
- Destroying Objects
- Abstract classes and Interfaces
- Abstract Methods and Abstract class
- Interface in Python
- Abstract classes and Interfaces

## Session 8: Exceptions

- Errors in Python
- Compile-Time Errors
- Runtime Errors
- Logical Errors
- What is Exception?
- Handling an exception
- Try ...except...else
- try-finally clause
- The argument of an Exception
- Python Standard Exceptions
- Raising an exceptions
- User-Defined Exception

## Session 9: Python Regular Expressions

- What are regular expressions?
- The match Function
- The search Function
- Matching vs searching
- Search and Replace
- Extended Regular Expressions
- Wildcard

## Session 10: Python Multithreaded Programming

- What is multithreading?
- Difference between a Process and Thread
- Concurrent Programming and GIL
- Uses of Thread
- Starting a New Thread
- The Threading Module
- Thread Synchronization
- Locks
- Semaphore
- Deadlock of Threads
- Avoiding Deadlocks
- Daemon Threads
- Session 11: Using Databases in Python
- Python MySQL Database Access
- Install the MySQLdb and other Packages
- Create Database Connection
- CREATE, INSERT, READ Operation
- DML and DDL Operation with Database
- Graphical User Interface
- GUI in Python
- Button Widget
- Label Widget
- Text Widget

## Session 12: Django Web Framework in Python

- Introduction to MVC and MVT architecture on web development.
- Django folder structure flow of control.

## Session 13: Web scraping in python

## Session 14: Introduction to Data Science


- MySQL Core and SQL Basics
- MYSQL Server Basics
- Database models
- ER Model Overview
- Data types
- Understanding Test Database
- Basics Queries
- Removing Duplicates
- Data Filters Using Operators
- Data Sorting
- Query Design & Functions
- Grouping
- Joins
- Arithmetic and String functions
- Advanced Functions
- SET Operators
- Creating Complex Queries
- DML operations - Insert, Update & Delete
- TSQL

- Database Operations
- Database Objects - Create, Alter and Drop Tables
- Views
- Complex Views
- Indexes
- Advanced Index Concepts
- Security - User Management Basics
- Routines
- Programming Basics
- Programming Concepts in PLSQL
- Cursors
- Nested Cursors
- Functions
- Procedures
- Interoperability between Functions & Procedures
- Query Optimization Techniques
- Project / Case Study