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RAYS Computer Education

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COURSE TITLE

PYTHON

COURSE OBJECTIVES

There are many benefits of learning Python. It is a language that is remarkably easy to learn, and it can be used as a stepping stone into other programming languages and work with and read. Most automation, data mining, and big data platforms rely on Python. This is because it is the ideal language to work with for general purpose tasks. Python allows for a more productive coding environment than massive languages like C# and java. Experienced coders tend to stay more organized and productive when working with Python, as well.

DETAILED SYLLABUS

SR.NO	SECTION (A) BASICS OF PYTHON	HOURS ALLOTTED
1	Introduction <ul style="list-style-type: none">❖ History of Python❖ Python Features❖ Setting up path<ul style="list-style-type: none">▪ Setting Path at Unix/Linux▪ Setting Path at Windows❖ Working with Python❖ Basic Syntax<ul style="list-style-type: none">▪ First Python Program▪ Python Identifiers▪ Quotation in Python▪ Comments in Python▪ Waiting for the User▪ Multiple-Line statements▪ Multiple Statements Groups as Suites▪ Command Line Arguments	

	<ul style="list-style-type: none"> ❖ Variable and Data Types <ul style="list-style-type: none"> ▪ Standard Data Types ▪ Python Numbers ▪ Python Strings ▪ Python Lists ▪ Python Tuples ▪ Python Dictionary ▪ Data Type Conversion 	
2	<ul style="list-style-type: none"> ❖ Basic Operators <ul style="list-style-type: none"> ❖ Types of Operator <ul style="list-style-type: none"> ▪ Python Arithmetic Operators ▪ Python Comparison Operators ▪ Python Assignment Operators ▪ Python Bitwise Operators ▪ Python Logical Operators ▪ Python Membership Operators ▪ Python Identity Operato ❖ Python Operators Precedence 	
3	<ul style="list-style-type: none"> ❖ Decision Making <ul style="list-style-type: none"> ❖ IF Statement ❖ IF .ELIF ELSE Statement ❖ Nested IF Statements ❖ Single Statement Suite 	
4	<ul style="list-style-type: none"> ❖ Loops <ul style="list-style-type: none"> ❖ while Loop Statements ❖ for Loop Statements ❖ Nested loops ❖ Loop Control Statement 	
5	<ul style="list-style-type: none"> ❖ Control Statements <ul style="list-style-type: none"> ❖ break statement ❖ continue Statement ❖ pass Statement ❖ Iterator and Generator 	

6	<p>Mathematical Functions</p> <p>abs() , ceil() , exp(), fabs() , floor(), log(), log10(), max(), min(), modf(), pow(), round(), sqrt(), choice(), randrange(), random(), seed(), shuffle(), uniform(), acos(), asin(), atan(), cos(), sin(), tan(), degrees(), radians()</p>	
7	<p>Strings</p> <ul style="list-style-type: none"> ❖ String Operations ❖ String Special Operators ❖ String Formatting Operator ❖ Triple Quotes ❖ Unicode String ❖ String Methods <p>capitalize(), center(), count(), decode(), encode(), endswith(), expandtabs(), find(), index(), isalnum(), isalpha(), isdigit(), islower(), isnumeric(), isspace(), istitle(), isupper(), join(), len(), ljust(), lower(), lstrip(), maketrans(), max(), min(), replace(), rfind(), rindex(), rjust(),rstrip(), split(), splitlines(), startswith(), strip(), swapcase(), title(), translate(), upper(), zfill(), isdecimal()</p>	
8	<p>Lists</p> <ul style="list-style-type: none"> ❖ About Python Lists ❖ Operation in Python Lists <ul style="list-style-type: none"> ▪ Accessing Values in Lists ▪ Updating Lists ▪ Delete List Elements ▪ Basic List Operations ▪ Indexing, Slicing and Matrixes ❖ Built-in List Functions & Methods <p>len(), max(), min(),list(),append(),count(), extend(), index(), insert(), pop(), remove(),reverse(),sort()</p>	

9	<p>Tuples</p> <ul style="list-style-type: none"> ❖ Accessing Values in Tuples ❖ Operations in Tuples <ul style="list-style-type: none"> ▪ Updating Tuples ▪ Delete Tuple Elements ▪ Basic Tuples Operations ▪ Indexing, Slicing, and Matrixes ▪ No Enclosing Delimiters ❖ Built-in Tuple Functions len(), max(), min() , tuple() 	
10	<p>Dictionary</p> <ul style="list-style-type: none"> ❖ About Dictionary ❖ Operations in Dictionary <ul style="list-style-type: none"> ▪ Accessing Values in Dictionary ▪ Updating Dictionary ▪ Delete Dictionary Elements ❖ Properties of Dictionary Keys ❖ Built-in Dictionary Functions & Methods len(), str(), type(), clear(),copy(), fromkeys(), get(), items(), keys(), setdefault(), update(), values() 	
11	<p>Functions</p> <ul style="list-style-type: none"> ❖ Defining a Function ❖ Calling a Function <ul style="list-style-type: none"> • Pass by Reference vs Value ❖ Arguments <ul style="list-style-type: none"> ▪ Function Arguments ▪ Required Arguments ▪ Keyword Arguments ▪ Default Arguments ▪ Variable-length Arguments ❖ The Anonymous Functions ❖ The return Statement 	

<p>12</p>	<p>Modules</p> <ul style="list-style-type: none"> ❖ The import Statement ❖ The from import Statement ❖ The from import Statement: ❖ Executing Modules as Scripts ❖ Locating Modules ❖ The PYTHONPATH Variable ❖ Namespaces and Scoping <ul style="list-style-type: none"> • dir(), globals() and locals(), reload() Function ❖ Packages in Python 		
<p>13</p>	<p>Files I/O</p> <ul style="list-style-type: none"> ❖ Introduction of file ❖ File Operation <ul style="list-style-type: none"> ▪ Printing to the Screen ▪ Reading Keyboard Input ▪ The input Function ▪ Opening and Closing Files ▪ The open Function ▪ The file Object Attributes ▪ The close() Method ▪ Reading and Writing Files ▪ The write() and read() Method ▪ File Positions ▪ Renaming and Deleting Files rename(), The remove() Method ❖ Directories in Python <ul style="list-style-type: none"> • mkdir(), chdir(), getcwd(), rmdir() ❖ File & Directory Related Methods File Methods, close(), flush(),fileno(), isatty(),next(), read(), readline(), readlines(), seek(), tell(), truncate(), write(), writelines() ❖ OS File/Directory Methods access(), chdir(), chflags(), chmod(), chown(), chroot(), close(), closerange(), dup(), dup2(), fchdir(), fchmod(), fchown(), fdasatync(), fdopen(), fpathconf(), fstat(), fstatvfs(), fsync(), ftruncate(), getcwd(), getcwdu(), isatty(), lchflags(), lchown(), link(), listdir(), lseek(), lstat(), major(), makedev(), makedirs(), minor(), mkdir(), mkfifo(), mknod(), open(), openpty(), pathconf(), pipe(), popen(), read(), readlink(), remove(), removedirs(), rename(), renames(),renames(), rmdir(), stat(), stat_float_times(), statvfs(), symlink(), tcgetpgrp(), tcsetpgrp(), tempnam(), tmpfile(), tmpnam(), ttyname(), unlink(), utime(), walk(), os.write() 		

14	Exceptions Handling <ul style="list-style-type: none"> ❖ What is Exception? ❖ Standard Exceptions ❖ Assertions in Python ❖ Handling an Exception <ul style="list-style-type: none"> ▪ The except Clause with No Exceptions ▪ The except Clause with Multiple Exceptions ▪ The try-finally Clause ▪ Argument of an Exception ▪ Raising an Exception ❖ User-Defined Exceptions 	
SECTION(B) ADVANCE PYTHON		
1	Object Oriented <ul style="list-style-type: none"> ❖ Overview of OOP Terminology ❖ About Class and Object <ul style="list-style-type: none"> ▪ Creating Classes ▪ Creating Instance Objects ❖ Accessing Attributes ❖ Built-In Class Attributes ❖ Destroying Objects (Garbage Collection) ❖ Class Inheritance ❖ Overriding Methods ❖ Base Overloading Methods ❖ Overloading Operators ❖ Data Hiding 	

2	<p>Regular Expressions</p> <ul style="list-style-type: none"> ❖ The match Function ❖ The search Function ❖ Matching Versus Searching ❖ Search and Replace ❖ Regular Expression Modifiers: Option Flags ❖ Regular Expression Patterns ❖ Regular Expression Examples ❖ Character classes ❖ Special Character Classes ❖ Repetition Cases ❖ Nongreedy Repetition ❖ Grouping with Parentheses ❖ Backreferences ❖ Alternatives ❖ Anchors ❖ Special Syntax with Parentheses 		
3	<p>CGI Programming</p> <ul style="list-style-type: none"> ❖ What is CGI? ❖ Web Browsing ❖ CGI Architecture Diagram ❖ Web Server Support and Configuration ❖ First CGI Program ❖ HTTP Header ❖ CGI Environment Variables ❖ GET and POST Methods ❖ Passing Information using GET method ❖ Simple URL Example – Get Method ❖ Simple FORM Example – GET Method ❖ Passing Radio Button Data to CGI Program ❖ Passing Text Area Data to CGI Program ❖ Passing Drop Down Box Data to CGI Program ❖ Cookies in CGI <ul style="list-style-type: none"> ▪ Using Cookies 		

	<ul style="list-style-type: none"> ▪ How It Works?\ ▪ Setting up Cookies ▪ Retrieving Cookies <ul style="list-style-type: none"> ❖ File Upload Example ❖ How To Raise a "File Download" Dialog Box ? 	
4	<p>Sending Email using SMTP</p> <ul style="list-style-type: none"> ❖ Sending an HTML e-mail using Python ❖ Sending Attachments as an E-mail 	
5	<p>Multithreaded Programming</p> <ul style="list-style-type: none"> ❖ Starting a New Thread ❖ The Threading Module ❖ Creating Thread Using Threading Module ❖ Synchronizing Threads ❖ Multithreaded Priority Queue 	
6	<p>XML Processing</p> <ul style="list-style-type: none"> ❖ What is XML? ❖ XML Parser Architectures and APIs ❖ Parsing XML with SAX APIs ❖ The make_parser Method ❖ The parse Method ❖ The parseString Method ❖ Parsing XML with DOM APIs 	

SECTION (C) WEB TECHNOLOGY

1

HTML:

- Introduction to HTML
- HTML Basics
- Concept of DIV
- HTML formatting
- HTML tables
- HTML blocks
- HTML iframe
- HTML computercode
- HTML URL concept
- HTML Forms
- HTML Media
- HTML5 New Tags/Features

2

CSS:

- CSS Introduction
- CSS Work flow
- CSS Icons
- CSS pseudo-class
- CSS pseudo-elements
- CSS Navigation-Bar
- CSS Combinators
- CSS Tooltips
- CSS Image Gallery
- CSS Image Sprites
- CSS Attribute selectors
- CSS Forms
- CSS Counter
- CSS3 2D/#D Transformation • CSS3 Animations
- CSS3 UI
- CSS3 Box Decoration
- CSS3 Responsive UI Design

3	<p>JAVASCRIPT:</p> <ul style="list-style-type: none"> • Introduction to JAVASCRIPT • How to use JAVASCRIPT • JAVASCRIPT Output • JAVASCRIPT selectors • JAVASCRIPT operators • JAVASCRIPT Variables and Datatype • JAVASCRIPT Object / functions / scope • JAVASCRIPT events • JAVASCRIPT string operations • JAVASCRIPT number operations • JAVASCRIPT loops • JAVASCRIPT most used methods • JAVASCRIPT error handling • JAVASCRIPT form handling 	
4	<p>JQuery Framework</p> <ul style="list-style-type: none"> • Introduction to JQuery Framework • How to use JQuery • JQuery most used methods • JQuery UI animation • JQuery Form validation • JQuery user alerts • Introduction to JQuery AJAX • How to use AJAX • AJAX call validation • Interaction with user with AJAX calls 	