Shri Swami Vivekanand Shikshan Sanstha

VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)

Department of Mathematics

"IIT Bombay Spoken Tutorial MOOC Courses"

Vivekanand College, Kolhapur has been at the forefront of providing quality education and fostering a culture of continuous learning. In collaboration with IIT Bombay Spoken Tutorial, the college has been offering a diverse range of Massive Open Online Courses (MOOCs) to empower students with cutting-edge skills. These courses include Scilab, PHP, and MySQL etc.

Course Structure: The IIT Bombay Spoken Tutorial courses are designed to meet the evolving needs of the industry and equip students with practical skills. The courses cover a spectrum of topics, including proficiency in programming languages like Scilab, PHP, and MySQL.

Online Sessions: Conducted by experts from IIT Bombay, the online sessions offer an interactive and engaging learning experience. Students have the opportunity to interact with seasoned professionals, clarifying doubts and gaining insights into real-world applications of the concepts they are learning. The virtual format ensures flexibility, allowing students to access the sessions at their convenience, fostering a conducive learning environment.

Examinations at Vivekanand College, Kolhapur: One of the unique aspects of this collaboration is the provision for examinations conducted online at Vivekanand College, Kolhapur. This not only adds a layer of convenience for students but also ensures a seamless transition from online learning to the evaluation process. The examinations are designed to assess the practical application of the skills acquired during the course. Benefits for Students: •

Skill Enhancement: The courses cater to the demands of contemporary industries, enhancing the employability of students by providing them with relevant skills. • Flexibility: The online format allows students to balance their academic commitments while acquiring valuable skills. • Certification: Successful completion of the courses results in certification from IIT Bombay, a testament to the students' proficiency in the respective domains. •

Community Impact: By establishing an IIT Bombay Spoken Tutorial Courses center, Vivekanand College has not only elevated the learning experience for its students but has also contributed to the larger goal of creating a skilled workforce. This initiative aligns with the national agenda of fostering digital literacy and technological proficiency. The collaboration between Vivekanand College, Kolhapur and IIT Bombay Spoken Tutorial has proven to be a commendable effort in providing quality education to students. The combination of online learning and localized examinations ensures a holistic educational experience. As students continue to benefit from these courses, the college remains committed to its mission of nurturing well-rounded and skilled individuals ready to excel in the professional landscape.

python

What is Python?

Python is a general purpose, high level, remarkably powerful dynamic programming language used in a wide variety of application domains.

Why Python?

- Easy to read and learn
- Free and Open Source
- Useful for scientific computing
- Powerful interactive interpreter
- Extensive scientific libraries
- Well documented

Where can you use Python?

- Numeric and Symbolic computation
- 2D/3D Plotting
- User interfaces
- Parallel computing
- Machine Learning and Image Processing
- Game development
- Web development
- Much more...

Who uses Python?

- Google
- Yahoo
- Walt Disney
- NASA
- IBM
- YouTube
- nVIDIA
- Software - Blender, Motion Builder, Cinema 4D, etc.
- Games - Battle field 2 by EA sports, Crystal space 3D, etc.

Python is one of the most popular programming languages today, and therefore has been included in the CBSE curriculum. It easily performs tasks that proprietary tools like Matlab and Mathematica offer. Today leading companies are using Python extensively, hence there are better job opportunities. Learn Python, and grab the Opportunity!

matplotlib   **django**   pandas   **SciPy**

SymPy   IP[y]: IPython

fossee better education

VIVEKANAND COLLEGE ESTD. JUNE 1964 KOLHAPUR

IIT BOMBAY

How can you learn Python

- **Spoken Tutorial** - The FOSSEE project has created a series of Spoken Tutorials on Python. Theses are available for learning, on the Spoken Tutorial website, free of cost. You can access these tutorials from this link
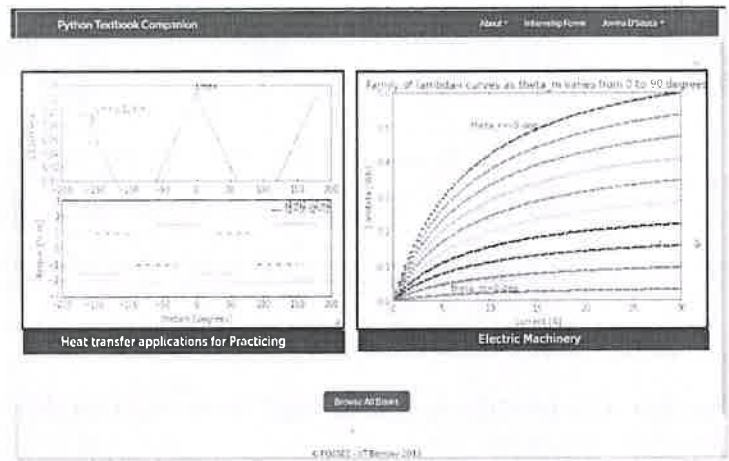
python.fossee.in/spoken-tutorials

Spoken Tutorial website

- **Textbook Companion Internship** - Learn Python in a practical way by contributing to the Python Textbook Companion Internship. It aims to create Companions by coding solved examples from Standard textbooks, using Python. Participate and earn attractive honoarium and Certificate of Internship from FOSSEE, IIT Bombay! For more details, please visit:

python.fossee.in/textbook-companion-project

Completed Book : Approx 453 books

Under Progress : Approx 113 books

Python Textbook Companion website

- **SELF Workshops** - The Spoken Tutorial Team conducts workshops on Python. These are completely free of cost, and are conducted without the need of any domain expert. Learn Python and obtain a certificate from Spoken Tutorial Project, IIT Bombay, upon successful completion of the post-workshop evaluation test. Please visit:

python.fossee.in/spoken-tutorials

About us

Website:

http://python.fossee.in

Contact us

General help & Queries:

info@fossee.in

python@fossee.in

Sponsored by

National Mission on Education through ICT
MHRD
http://www.sakshat.ac.in

IIT BOMBAY

1.Getting started with IPython

Foss : *Python 3.4.3 - English*

Outline: >Use Python 3.5.2 >Use Ipython version 5.1.0 >IPython is an enhanced interactive Python interpreter. >Invoke the IPython interpreter >Quit the IPython interpreter >Navigate th..

Basic

2.Using plot command interactively

Foss : *Python 3.4.3 - English*

Outline: Use Python 3.4.3 Use Ipython version 5.1.0 Start IPython with pylab. ImportError if matplotlib is not installed clf() function Use the linspace function to create equally spac..

3.Embellishing a plot

Foss : *Python 3.4.3 - English*

Outline: Use Python 3.4.3 Use Ipython version 5.1.0 Modify the attributes of a plot Pass additional keyword arguments to plot command Add title to a plot using 'title' command. Incor..

4.Saving plots

Foss : *Python 3.4.3 - English*

Outline: Use Python 3.4.3 Use Ipython version 5.1.0 Save plots using the savefig() function. Save the plots in different formats like pdf ps png svg eps

5.Multiple plots

Foss : *Python 3.4.3 - English*

Outline: -Use Python 3.4.3 - Use IPython 5.1.0 - Draw multiple plots which are overlaid. - Operations on individual plots. - Use the figure command. - Distinguish between multiple over..

6.Subplots

Foss : *Python 3.4.3 - English*

Outline: * Use Python 3.4.3 * Use IPython 5.1.0 * Creating subplots * Switching between subplots. * Subplot command * Passing arguments to subplot command. * First argument is the num..

7.Additional features of IPython

Foss : *Python 3.4.3 - English*

Outline: * Use Python 3.4.3 * Use IPython 5.1.0 * Retrieve the history using %history command. * View only a part of history by passing argument to %history command. * Pass arguments t..

8.Loading Data From Files

Foss : *Python 3.4.3 - English*

Outline: load data from file single column multiple columns separated by delimiter cat command loadtxt() columns separated by spaces columns separated by semi-colon unpack argument ..

9.Plotting Data

Foss : *Python 3.4.3 - English*

Outline: plotting data list list element-wise squaring plot data points clear plots errorbar function dots or filled circles in plot plot with red pluses explore documentation in ip..

10.Other Types Of Plots

Foss : *Python 3.4.3 - English*

Outline: scatter plot scatter function scatter plot with various arguments logarithmic plot loglog function cat command loadtxt function unpack parameter of loadtxt linspace scatte..

11.Plotting Charts

Foss : *Python 3.4.3 - English*

Outline: * Use Python 3.4.3 * Use IPython 5.1.0 * To produce scatter plot * Plot a pie chart using pie() function * Plot a bar chart using bar() function * Access the matplotlib online..

12.Getting started with Lists

Foss : *Python 3.4.3 - English*

Outline: What is a list? Define List List index Create: List with elements Empty list List within a list Find out the list length using len function Access elements using their..

13.Getting started with for

Foss : *Python 3.4.3 - English*

Outline: For loop syntax Example to use For loop Indentation in for loop Create blocks in python using for Iterate over a list using for loop How to get out of the block use of Range(..

14.Getting started with strings

Foss : *Python 3.4.3 - English*

Outline: What are strings? How are strings denoted in Python? String concatenation Multiply a string with an integer Accessing individual elements of a string Accessing elements of a s..

15.Getting started with files

Foss : *Python 3.4.3 - English*

Outline: Open a file Open() function Different Modes of opening a file Read() method Read the content of the file line by line Read the entire content of the file Append the lines of ..

16. Parsing data

Foss : *Python 3.4.3 - English*

Outline: What is Parsing data? split function and its syntax What is string tokenizing? How to split a string on whitespace? split function with argument strip function and example Co..

17. Statistics

Foss : *Python 3.4.3 - English*

Outline: Statistical operations in Python Installation of Numpy for mathematical and logical operations Installation of pip to install python libraries loadtxt() function with example G..

18. Getting started with arrays

Foss : *Python 3.4.3 - English*

Outline: Overview of array Usage of numpy library How to create arrays How to create two dimensional array arange() method reshape() method How to find the shape of an array? Create ..

19. Accessing parts of arrays

Foss : *Python 3.4.3 - English*

Outline: Create a one-dimensional array Create a two-dimensional array Accessing individual elements of an array How to change the value of an array How to change more than one elements..

20. Image manipulation using Arrays

Foss : *Python 3.4.3 - English*

Outline: Read images into arrays How to access parts of an array? imread command imshow command show command How to check the dimensions of an array? Example to access parts of an ima..

1. Basic Matrix Operations

Foss : *Python 3.4.3 - English*

Outline: Create matrices from lists asmatrix method arange and reshape methods Basic matrix operation Addition, subtraction and multiplication of a matrix Determinant of a matrix eye..

2. Advanced Matrix Operations

Foss : *Python 3.4.3 - English*

Outline: flatten() function Example to convert a multidimensional matrix to single dimension matrix Frobenius norm of a matrix Demonstration of Frobenius norm of a matrix Inverse of a m..

3. Least square fit

Foss : *Python 3.4.3 - English*

Outline: Generating a Least Square fit line Generating L vs t square loadtxt function Usage of numpy library Plotting L vs t square Steps for least square fit line Matrix formulation

4.Basic datatypes and operators

Foss : *Python 3.4.3 - English*

Outline: Data types in Python Demonstration of int, float and complex data types with examples Different functions associated with int data type Complex numbers and their functions Bool..

5.Sequence datatypes

Foss : *Python 3.4.3 - English*

Outline: List, string and tuple sequence data types with examples How to access a list using index numbers? Access the string elements Access the tuple elements How to add different seq..

6.Input-output

Foss : *Python 3.4.3 - English*

Outline: Various output statements Print a string Print a string with newline character How to use format operators? Example for integer format Example for string format Example for f..

7.Conditional Statements

Foss : *Python 3.4.3 - English*

Outline: if condition statement Demonstration of if statement with example if/else condition statement with example Importance of indentation in a program Usage of colon in program Con..

8.Loops

Foss : *Python 3.4.3 - English*

Outline: Explanation of while loop Demonstration of while loop with example Print the squares of all the even numbers below 10 using while loop How to use for loop? Print the squares of..

9.Manipulating lists

Foss : *Python 3.4.3 - English*

Outline: Various manipulation in lists Slicing of lists Syntax and demonstration of slicing of lists How to use step value in slicing Striding of list Examples with various parameters ..

10.Manipulating strings

Foss : *Python 3.4.3 - English*

Outline: How to slice a string Various way to get substrings using index Reverse a string How to check if a given string is a palindrome or not Replace characters in a string Convert a..

11.Getting started with tuples

Foss : *Python 3.4.3 - English*

Outline: What are tuples? How to declare tuples? Examples to declare tuples Demonstration of creating tuple Accessing tuples by their index positions Iteration over tuples Demonstrati..

12.Dictionaries

Foss : *Python 3.4.3 - English*

Outline: Overview of dictionaries Creating an empty dictionary Creating a non empty dictionary About key:value pair How to access the dictionary elements Demonstration of wrong key Ad..

13.Sets in Python

Foss : *Python 3.4.3 - English*

Outline: What are sets in python? Input sets Create sets How to create empty sets? Operations on sets Add and remove methods Union and intersection methods Difference and symmetric_d..

14.Getting Started with Functions

Foss : *Python 3.4.3 - English*

Outline: About Functions How to define a function Example for defining a function Calling a function with arguments Calling a function without arguments Return values from a function ..

15.Advanced Features of Functions

Foss : *Python 3.4.3 - English*

Outline: Functions with default arguments Various examples for default arguments Interchanging the default and non-default arguments Call a function with keyword arguments Call a functi..

16.Using Python Modules

Foss : *Python 3.4.3 - English*

Outline: Python modules Run a Python script from command line How to import modules in python scripts? How to import required functions from a module? Usage of namespace Advantages of ..

17.Writing Python Scripts

Foss : *Python 3.4.3 - English*

Outline: About Python modules What is importing? How to write a function and save it as a script Run a python script Import a module Example to import a module usage of   name varia..

18.Testing and Debugging

Foss : *Python 3.4.3 - English*

Outline: What is software testing? Write a simple function How to write test cases? Create simple tests for a function Run the script and test the code Automate tests Example for test..

19. Handling Errors and Exceptions

Foss : *Python 3.4.3 - English*

Outline: Errors in Python Syntax errors and exception Exceptions with example Syntax error with example Demonstration of ValueError exception Demonstration of ZeroDivisionError excepti..

Vivekanand College. Kolhapur (Autonomous)
IIT, Bombay Spoken Tutorial Courses
Course Name: Python - Python 3.4.3
Participant List

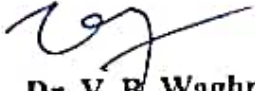| Sr. No.	Name	Email	Gender
1	NIKITA PATIL	nikitapatil3136@gmail.com	Female
2	SUNIL PATIL	sp033129@gmail.com	Male
3	TANAY PUSALKAR	tanaypusalkar@gmail.com	Male
4	AMRUTA DABADE	amrutadabade728@gmail.com	Female
5	RUTURAJ INAMDAR	ruturaj8966@gmail.com	Male
6	SNEHAL NIRMALE	snehalnirmale1407@gmail.com	Female
7	AARTI NIKALJE	aartinikalje65@gmail.com	Female
8	RAJVARDHAN MAGDUM	rajmagdum2325@gmail.com	Male
9	HARSHADA SUTAR	harshadasutar7777@gmail.com	Female
10	VAISHNAVI SUTAR	svaishnavi539@gmail.com	Female
11	KIRTI SHINDE	kirti182001@gmail.com	Female
12	PANKAJ KHANDARE	pankajkhandare72@gmail.com	Male
13	SNEHAL PATIL	snehalpatil1282001@gmail.com	Female
14	AISHWARYA CHAVAN	aishuschavan332001@gmail.com	Female
15	PREETI KATYAR	preetikatyar99@gmail.com	Female
16	UDITANSHU PRABHAVALE	uditanshuprabhavale2001@gmail.com	Male
17	SHREYA KORDE	shreyakorde01@gmail.com	Female

18	SAYALI JADHAV	sayalijadhav061@gmail.com	Female
19	Abhishek Patil	patilap1854@gmail.com	Male
20	SANTOSH PATIL	sp8059617@gmail.com	Male
21	ASHRAFALLI MULLA	mullaashraf2001@gmail.com	Male
22	KAJAL KATYAR	kajalkatyar6@gmail.com	Female
23	TEJASHREE SAGAONKAR	tejashree1215@gmail.com	Female
24	ASHUTOSH SHIVANE	as31563156@gmail.com	Male
25	RUTUJA DINDE	dinderutuja8@gmail.com	Female
26	POONAM GIRI	poonamgiri6363@gmail.com	Female
27	VAISHNAVI KHURANDALE	vaishnavikhurandale16@gmail.com	Female
28	PRANJAL SHINTRE	pranjalshintre@gmail.com	Male
29	PRAJAKTA SANKPAL	psankpal5060@gmail.com	Female
30	KETAN CHOUGALE	ketankc07@gmail.com	Male
31	ANANYA KADWALE	abkadwale@gmail.com	Male
32	SAKSHI PATIL	patilsakshi05102001@gmail.com	Female
33	AKANKSHA DESAI	desaiakanksha2001@gmail.com	Female
34	TASMIYA JAMADAR	tasmiyajamadar199@gmail.com	Female
35	AADESH PATIL	0crasy007@gmail.com	Male
36	BHARGAVI KUGAJI	bhargavikugaji19@gmail.com	Female
37	SUJIT PATIL	sujitpatil0708@gmail.com	Male

38	SAMADHAN ARADE	samadhana90@gmail.com	Male
39	SWAPNIL MORE	swapnilmore051@gmail.com	Male
40	SANKET EKAL	sanketekal@gmail.com	Male
41	AKSHATA MAHADIK	mahadikakshata2412@gmail.com	Female
42	PRATIK CHAVAN	pratikchavan640@gmail.com	Male

Dr. V. B. Waghmare
HEAD
DEPARTMENT OF COMPUTER SCIENCE
VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)

Certificate of Participation

This is to certify that **SUNIL PATIL** participated in the **Python 3.4.3** training organized at **Vivekanand College** in **January 2020** semester, with course material provided by the Spoken Tutorial Project, IIT Bombay.

A comprehensive set of topics pertaining to **Python 3.4.3** were covered in the training. This training is offered by the Spoken Tutorial Project, IIT Bombay.

March 15th 2020

Prof. Kannan M Moudgalya
IIT Bombay

Spoken Tutorial
Project at
IIT Bombay