



Janata Shikshan Sanstha's
KISAN VEER MAHAVIDYALAYA, WAI
Department of Mathematics



"Certificate Course in Python"

Course Report: 2021-22

The department of Mathematics had decided to conduct a certificate course for B.Sc. III in departmental meeting. The title of the course is "Certificate Course in Python" was finalized. The notification and advertisement were made through our college website and Brochure of the course was uploaded on the college website. The course was started on 22nd Nov 2022. The timetable was displayed on the department's notice board.

5 students were admitted for the said course. Regular lectures and practicals were conducted according to the time-table. Department of BCA, Statistics and Mathematics in Collaboration with Patil Academy, Satara organized Three-day workshop on "Python in Future Technologies" on 18th, 20th and 22nd December 2021. Examination of the said course was conducted and certificates were issued to all the passed students. Students gained the knowledge about programming using Python and one more certificate along with the B.Sc. degree. The supportive staff and the administration of the College and specially Hon. Principal supported a lot.

The record of the course has maintained in the department. One copy had given in IQAC cell and same had been uploaded on college website.

Dr. S. R. Tate
Course Coordinator
Department of Mathematics



Dr. Gurunath. J. Fagare
Principal
Kisan Veer Mahavidyalaya, Wai

Department of Mathematics

Kisan Veer Mahavidyalaya, Wai

Date:- 26/10/2021

To,
Principal,
Kisan Veer Mahavidyalaya, Wai.

Sub: - About starting a new short term course "Certificate Course in Python" for
B. Sc. III (Mathematics) from academic year 2021-22

Respected Sir,

With reference to above subject, Department of Mathematics going to start a new short term course for B. Sc. III (Mathematics) student entitled "Certificate Course in Python" from academic year 2021-22. Duration of the course will be 3 Months and intake capacity will be 40.

So, it is a humble request to give permission to start this course.

Thanking You,

प्रवाजगो ओह.

26/10/2021

26/10/2021

Yours Sincerely,

S. R. Tate

(Dr. S. R. Tate)
Head
Department of Mathematics
Kisan Veer Mahavidyalaya
Wai - 412803

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya, Wai
Department of Mathematics

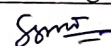
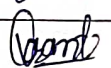
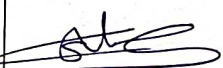

Self Funded Certificate Course in Python

BOARD OF STUDIES MEETING PROCEEDING

Date: 29/10/2021

The first meeting of the BOS was called on dated 29th October 2021, at 2.30 P.M. at Kisan Veer Mahavidyalaya, Wai.

Present Member:

Sr. No.	Name	Designation	Sign
1	Dr. S. R. Tate	Head, Department of Mathematics	
2	Mrs. V. A. Sawant	Assistant Professor	
3	Mr. S. S. Nalavade	Expert, Head, Department of Mathematics, Y. C. I. S, Satara	
4	Mrs. S. A. Patil	Expert, Patil Academy, Satara	

Following subjects were discussed in the meeting.

- 1) Formulation of syllabus for Certificate Course in Python.
- 2) Aims and objectives of the course were designed and framed.
- 3) Accordingly, the papers, topics and sub topics were designed as per the need of the course.
- 4) It has been decided that the last year B.Sc. Part III Mathematics Student's are eligible for this course.
- 5) Since there was no matter for discussion, the meeting was concluded.

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalay, Wai
Department of Mathematics

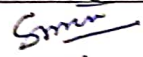
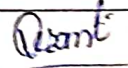


Self Funded Certificate Course in Python

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4	Mrs. S. A. Patil	Expert, Patil Academy, Satara	

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- 3) Accordingly, the papers, topics and sub topics were designed as per the need of the course.
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Janata Shikshan Sanstha's

Kisan Veer Mahavidyalaya, Wai

Department of Mathematics

CERTIFICATE COURSE IN PYTHON

SYLLABUS

- 1) **Introduction to Python:**
Python Identifiers and Keywords, data types, simple mathematical operation, Indentation and Comments. Input and Output, First Python program
- 2) **Expression and operators:**
Expression, Boolean expression, logical operations: comparison operator, membership operator, identity operator, bitwise operator. Order of evaluation. File Handling: open, read, write, append modes of file.
- 3) **Conditional Statements:**
if-else, nested if-else, if-elif-else, try-except block.
- 4) **Looping Statements, Control statements:**
Looping Statements: for loop, while loop, Nested loops, Control Statements: break, continue and pass.
- 5) **Functions:**
Built-in functions, User-defined functions, Arguments, recursive function, Python Anonymous/Lambda Function, Global, Local and Nonlocal variables and return statement.
- 6) **Modules and packages in Python:**
Modules, import, import with renaming, from-import statement, math module, cmath module, random module, packages.
- 7) **Python Data structure:**
Strings, list, tuples, dictionary, set and array.
- 8) **Operations on set and array:**
Set operations, Intersection, union, difference, symmetric difference, searching and sorting.
- 9) **Data visualization in Python:** 2D and 3D plot in python: line plot, bar plot, histogram plot, scatter plot, pie plot, area plot, Mandelbrot fractal set visualization.

Practical Programs:

- 1) Program to Display "Hello Python" on Screen
- 2) Program to create file
- 3) Program to find greater number between two numbers
- 4) Program to find greater and equal number between two numbers
- 5) Program to find the number is Positive or Negative
- 6) Program to calculate the class obtained by the student.
- 7) Program to calculate the maximum between three numbers.
- 8) Program to determine whether the given integer is odd or even.
- 9) Program to find sum of first n integers
- 10) Program to find factorial of n
- 11) Program to check whether a given number is prime or not.
- 12) Program to find factorial of n using Recursive Function
- 13) Program to check whether the given numbers are relatively prime or not.
- 14) Program to verify Euler's formula using Python.
- 15) Program to check palindrome string. (A palindrome string is one that reads the same backward as well as forward.)
- 16) Program to remove duplicates from a list
- 17) Program to add an element in the set.
- 18) Program to remove elements in the set.
- 19) Program to solving systems of linear equations using Gauss Elimination Method
- 20) Program to solving systems of linear equations using LU Decomposition method
- 21) Program to find root of an equation using Bisection Method
- 22) Program to find root of an equation using Newton-Raphson formula
- 23) Program to solving ordinary differential equations (ODEs) with a given initial value using Euler Method
- 24) Program to find the approximate solution of ordinary differential equations (ODEs) with a given initial value using Runge-Kutta 4th Order Method.
- 25) Plotting 2D, 3D graphs.

Evaluation: Practical Work (40) + Viva Voce (10).

Janata Shikshan Sanstha's

Kisan Veer Mahavidyalaya, Wai

Department of Mathematics

CERTIFICATE COURSE IN PYTHON

STUDENT LIST (2021-22)

SR. NO.	ROLL NO.	NAME
1	6	PETKAR DIVYA SANTOSH
2	36	CHORAGE PRAJAKTA PRAKASH
3	80	DHANAWADE SHRADDHA SANTOSH
4	101	BHOSALE KAIVALYA SANTOSH
5	114	BHOSALE RUTUJA DHANAJI



Co-ordinator

Head, Department of Mathematics

Kisan Veer Mahavidyalaya, Wai

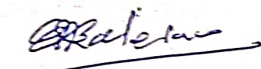
Department of Mathematics

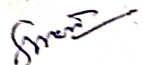
Kisan Veer Mahavidyalaya, Wai

Date : 20/11/2021

Notice

All the students of B.Sc. III are hereby informed that "Certificate Course in Python" is going to start from 22/11/2021. This course is compulsory for B.Sc. III (Mathematics) Students.


Principal


Course Co-ordinator
Department of Mathematics

Janata Shikshan Sansth's

Kisan Veer Mahavidyalaya, Wai

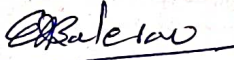
Department of Mathematics

CERTIFICATE COURSE IN PYTHON

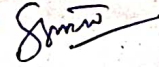
TIME TABLE (2021-22)

Time	Friday	Saturday
11:00 am – 12:00 pm	Theory (VAS)	Theory (VAS)
12:00 pm – 2: 00 pm	Practical (SRT)	Practical (SRT)

Note Attendance of student is compulsory



Principal



Course Co-ordinator

Department of Mathematics

Janata Shikshan Sanstha's
KISAN VEER MAHA VIDYALAYA, WAI
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN PYTHON

2020-21

ATTENDANCE (THEORY)

Class: B.Sc.III

Sr. No.	Roll No.	Name	22/11/2021	20/11/2021	27/11/2021	3/12/21	5/12/21	10/12/21	11/12/21	17/12/21
1	6	PETKAR DIVYA SANTOSH	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar
2	36	PRAJAKTA PRAKASH CHORAGE	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage
3	80	DHANAWADE SHRADDHA SANTOSH	S	S	S	S	S	S	S	S
4	101	KAIVALYA SANTOSH BHOSALE	KBS	KBS	KBS	KBS	KBS	KBS	KBS	KBS
5	114	BHOSALE RUTUJA DHANAJI								

ATTENDANCE (PRACTICAL)

Class: B.Sc.III

Sr. No.	Roll No.	Name	22/11/2021	20/11/2021	27/11/2021	3/12/21	5/12/21	10/12/21	11/12/21	17/12/21
1	6	PETKAR DIVYA SANTOSH	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar
2	36	PRAJAKTA PRAKASH CHORAGE	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage
3	80	DHANAWADE SHRADDHA SANTOSH	S	S	S	S	S	S	S	S
4	101	KAIVALYA SANTOSH BHOSALE	KBS	KBS	KBS	KBS	KBS	KBS	KBS	KBS
5	114	BHOSALE RUTUJA DHANAJI								

Signature

Head
Department of Mathematics
Kisan Veer Mahavidyalaya
Wai - 412803

Janata Shikshan Sanstha's
KISAN VEER MAHA VIDYALAYA, WAI
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN PYTHON

2020-21

ATTENDANCE (THEORY)

Class: B.Sc.III

Sr. No.	Roll No	Name	19/12/21	25/12/21	31/12/21	1/1/22	7/1/22	8/1/22	11/3/22	12/3/22
1	6	PETKAR DIVYA SANTOSH	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh
2	36	PRAJAKTA PRAKASH CHORAGE	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage
3	80	DHANAWADE SHRADDHA SANTOSH	S	S	S	S	S	S	S	S
4	101	KAIVALYA SANTOSH BHOSALE	P. B.	P. B.	P. B.	P. B.	P. B.	P. B.	P. B.	P. B.
5	114	BHOSALE RUTUJA DHANAJI								

ATTENDANCE (PRACTICAL)

Class: B.Sc.III

Sr. No.	Roll No	Name	19/12/21	25/12/21	31/12/21	1/1/22	7/1/22	8/1/22	11/3/22	12/3/22
1	6	PETKAR DIVYA SANTOSH	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh	P. Santosh
2	36	PRAJAKTA PRAKASH CHORAGE	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage	P. Chorage
3	80	DHANAWADE SHRADDHA SANTOSH	S	S	S	S	S	S	S	S
4	101	KAIVALYA SANTOSH BHOSALE	P. B.	P. B.	P. B.	P. B.	P. B.	P. B.	P. B.	P. B.
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Head
Department of Mathematics
Kisan Veer Mahavidyalaya
Wai - 412803

KISAN VEER MAHAVIDYALAYA, WAI
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN PYTHON

2020-21

ATTENDANCE (THEORY)

Class: B.Sc.III

Sr. No.	Roll No	Name	19/3/22	19/3/22	25/3/22	26/3/22	1/4/22	8/4/22	9/4/22	16/4/22
1	6	PETKAR DIVYA SANTOSH	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar
2	36	PRAJAKTA PRAKASH CHORAGE	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage
3	80	DHANAWADE SHRADDHA SANTOSH	SP	SP	SP	SP	SP	SP	SP	SP
4	101	KAIVALYA SANTOSH BHOSALE	PB	PB	PB	PB	PB	PB	PB	PB
5	114	BHOSALE RUTUJA DHANAJI								

ATTENDANCE (PRACTICAL)

Class: B.Sc.III

Sr. No.	Roll No	Name	19/3/22	19/3/22	25/3/22	26/3/22	1/4/22	8/4/22	9/4/22	16/4/22
1	6	PETKAR DIVYA SANTOSH	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar
2	36	PRAJAKTA PRAKASH CHORAGE	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage	PChorage
3	80	DHANAWADE SHRADDHA SANTOSH	SP	SP	SP	SP	SP	SP	SP	SP
4	101	KAIVALYA SANTOSH BHOSALE	PB	PB	PB	PB	PB	PB	PB	PB
5	114	BHOSALE RUTUJA DHANAJI								

Head

Department of Mathematics

Kisan Veer Mahavidyalaya

Wai - 412803

Janata Shikshan Sanstha's
KISAN VEER MAHAVIDYALAYA, WAI
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN PYTHON

2020-21

Class: B.Sc.III

ATTENDANCE (THEORY)

Sr. No.	Roll No	Name	22/5/22	23/5/22	29/5/22	30/5/22	6/5/22	7/5/22	13/5/22	14/5/22
1	6	PETKAR DIVYA SANTOSH	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar	Petkar
2	36	PRAJAKTA PRAKASH CHORAGE	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta
3	80	DHANAWADE SHRADDHA SANTOSH	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade
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3	80	DHANAWADE SHRADDHA SANTOSH	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade	Dhanawade
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Head

Department of Mathematics
Kisan Veer Mahavidyalaya
Wai - 412803

Office,

Kisan Veer Mahavidyalaya, wai,

Date: 01/06/2022.

Notice

All the students of B. Sc. III (Mathematics) are hereby informed that their final Examination of "Certificate Course in Python" will be held on Wednesday, 8th June, 2022. The students who will remain absent for the examination and the students who will be failed in the examination, will not be able to get Certificate of the Course.



Co-ordinator

Head, Department of Mathematics

Kisan Veer Mahavidyalaya, Wai

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya, Wal
CERTIFICATE COURSE IN PYTHON
B. Sc. III (Mathematics)

Day and Date: - Wednesday, 08-06-2022

Total Marks:-50

Time: - 11:00 A.M. Onwards

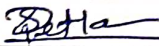
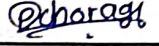

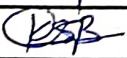
Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Distribution of marks; Practical Work (40) + Viva Voce (10).

- Q.1 A) Write a code in python to find the numerical solution of the differential equation $\frac{dy}{dx} = f(x, y)$ with initial conditions $y=y_0$ when $x=x_0$, using **Euler's Modified method**. (10)
- B) Run the **Euler's Modified method** program to solve $\frac{dy}{dx} = xy$ and $y(0)=1$, take $h=0.1$ and find the value of y at $x=1$. (05)
- OR
- Q. 1 (A) Write a code in python to solve a system of Linear equations $AX=B$ by **LU-factorization method**. (10)
- (B) Run the **LU-factorization method** program to solve the following system of equations $x + y + z = 1, 3x + y - 3z = 5, x - 2y - 5z = 10$ (05)
- Q. 2 (A) Write a code in python to find the numerical solution of the differential equation $\frac{dy}{dx} = f(x, y)$ with initial condition $y = y_0$ when $x=x_0$, using **fourth order Runge-Kutta method**. (10)
- B) Run the fourth order Runge -Kutta method program to solve $\frac{dy}{dx} = x^2y$ and $y(0)=1$, taking $h=0.1$ and find the value of y at $x=1$. (05)
- OR
- Q.2 A) Write a code in python to find one of the approximate root of function $f(x)$ using **Newton Raphson method**. (10)
- B) Run the **Newton Raphson method** program to find one of the approximate root of $f(x) = x^5 + 3x - 10$. (05)
- Q.3 Solve any **TWO** of the following problems by using python. (10)
- (a) Construct the list of 23,24,43,23,12,31,45,54,56,79,40 and append this by 20,30,40
- (b) Find the value of $\sin(30^\circ)$
- (c) Sort the given list in descending order: 92,34,65,88,21,23.
- (d) For given two sets $A = \{1,2,5\}$ and $B = \{5,7,8\}$ find set difference and symmetric difference.

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya Wai
Department of Mathematics
Examination: Certificate Course in Python (2021-22)
Attendance

Time: 11:00 to 2:00

Date: 08/06/2022

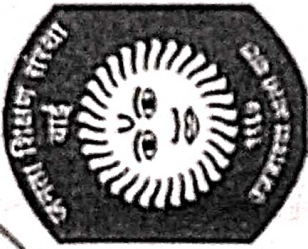
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5	114	BHOSALE RUTUJA DHANAJI	AB

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya Wai
Department of Mathematics
Examination: Certificate Course in Python (2021-22)
Marksheet

Time: 11:00 to 2:00

Date: 08/06/2022

Sr. No	Roll No.	Name of the Student	Marks (50)
1	6	PETKAR DIVYA SANTOSH	44
2	36	CHORAGE PRAJAKTA PRAKASH	48
3	80	DHANAWADE SHRADDHA SANTOSH	45
4	101	BHOSALE KAIVALYA SANTOSH	36
5	114	BHOSALE RUTUJA DHANAJI	AB



Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya, Wai
Department of Mathematics



This is to certify that Miss. Dhanawade Shraddha Santosh studying in B. Sc. III

(Mathematics) has completed successfully Certificate Course in Python conducted by the

Department of Mathematics, Kisan Veer Mahavidyalaya, Wai during the Academic year 2021-22

and obtained Grade "A".

Date: 08/06/2022

Co-ordinator
Head, Department of Mathematics
Kisan Veer Mahavidyalaya, Wai

Principal
Kisan Veer Mahavidyalaya, Wai