St. JOSEPH'S DEGREE COLLEGE

**Sunkesula Road, Kurnool – 518 004 A.P.**

(Affiliated to Rayalaseema University, Kurnool)

# CERTIFICATE COURSE

# on

# Python Language

## Academic Year

## 2021-2022

## COURSE CO-ORDINATORS:

1.Mrs.S.Latha Rani      2.Mr. K.S.Nanda Kishore      3.Mr. P.Sai Srujana

4.Mr.J.Ramesh      5.Mrs.B.Manju Bhargavi

## <u>CIRCULAR</u>

This is to inform that the Department to Computer Science is conducting "**A Certification Course on Python Language**" for the benefits of **B.Sc., & B.Com V Semester** students. In this part of training course the students will learn and develop projects using Python Software. The course will focus on Python Basics and Machine Learning and how to achieve the results with Python. It is expected that the students will gain knowledge to do their academic project using python coding.

We are going to assign mentors for student project batches and guide them.

Interested students can enroll their names with following Course Co-coordinators before 31$^{st}$ October, 2021. **For B.Sc. (Maths) Groups:** Mr. K.S.Nanda Kishore Mr. P.Sai Srujana **For B.Com (CA) Groups:** Mr.J.Ramesh
Mrs.B.Manju Bhargavi

The classes will be held daily in the afternoon from 3 PM to 5 PM.


# <u>WRITE - UP</u>

## <u>OBJECTIVES OF COURSE</u>
> ➢ Participants will be able to understand and use python language basics and libraries as a tool for data analytics
> ➢ Participants will be able to create Python codes and shall be able to complete projects for academic purpose
> ➢ Participants will be able to learn Machine Learning Concepts using python

## <u>ABOUT COURSE</u>

A "**Certificate Course on Python Language**" was conducted by the Department of
Computer Science, St. Joseph's Degree College, Kurnool in the year 2020- 2021. One of the top languages used for data science is Python. With its power and flexibility, Python is highly sought after as a preferred tool by data scientists. The course aims to equip students with essential skills using Python. The course will focus on Python Basics and Machine Learning and how to achieve the results with Python. It is expected that the students will gain knowledge to do their academic project using python coding.
The resource person for the program is **Sri M.Nagaraju, Hyderabad.**
It was an Online Faculty Development Program attended by computer faculty members and research scholars as well as students of engineering of various colleges from other states. It was over all a fruitful event and participants were expressing satisfaction.

We hope really this program gave some confident to get the knowledge about Cloud Computing Technology and to speeding up their skills and capabilities in this field will get them market ready and opens up more career opportunities and ideas for start-ups.

# SYLLABUS FOR PYTHON LANGUAGE:

Machine Learning & Neural Networks using Python
Contents of this course

## 1. Introduction to python
Getting Started
Installing Python
Pip – python package manager
Setting up virtual environment
Setting up Jupyter Notebook / ipython

1.2.Indentation
1.3.Datatypes
1.4.Basic i/o
1.5.Flow control statements and loops 1.6.Date
Time formatting 1.7.Mathematical operators
1.8.Boolean and bitwise operators 1.9.Sets

Dictionaries,Lists,Arrays,Enum,Variable Scope
File Handling,Some helpful python's inbuilt functions
Lambda functions,OOP in python,
Exercise Session-Problem solving using python

## 2. Socket programming using Python

## 3. Most used modules in python
Math - Numpy – N dimensional matrix operations
3.3.Matplotlib - Plotting and visualizing data 3.4.Scipy – Signal processing in python,3.5.OpenCV – Open source Computer Vision library ,3.6.Pandas – handling non-numeric data ,3.7.PIL - python image library 3.8.Exercise Session

## 4. Introduction to linear algebra
Row Space & Column Space,
Time and Space complexity of matrix operations 4.3.Matrix Factorizations, 4.4.Symmetric, Orthogonal & Orthonormal matrices
4.5.Eigen Values & Eigen Vectors, 4.6.Positive definite & Semipositive definite matrices 4.7.SVD-Singular Value Decomposition, 4.8.Graham Smidt decomposition

## 5. Machine learning
Different kinds of ML techniques 5.2.Knowing your data,5.3.Filtering the noise 5.4.Feature extraction, 5.5.Creating a Machine learning model / Optimization problem, 5.6.Fitting/training the model
Prediction based on the learning model
Creating a classification model using Scikit Learn

## 6. Neural Networks
Introduction to neuron
Similarities and differences between ML & NN 6.3.Activation Functions

Input, output and hidden layers
PCA – Principal component analysis 6.6.Types of neural networks
6.7.Creating our own NN using TensorFlow and Keras 6.8.Speeding up the training process using TensorFlow-gpu

# ATTENDANCE SHEETS OF  B.SC & B.COM STUDENTS

## GOOGLE LINK:

**https://drive.google.com/file/d/1unbsk9LGp8k9Oyo_Xs4yztRwG3DdrmB6 / view?usp=share_link**

## GOOGLE FORM REGISTRATION LINK:

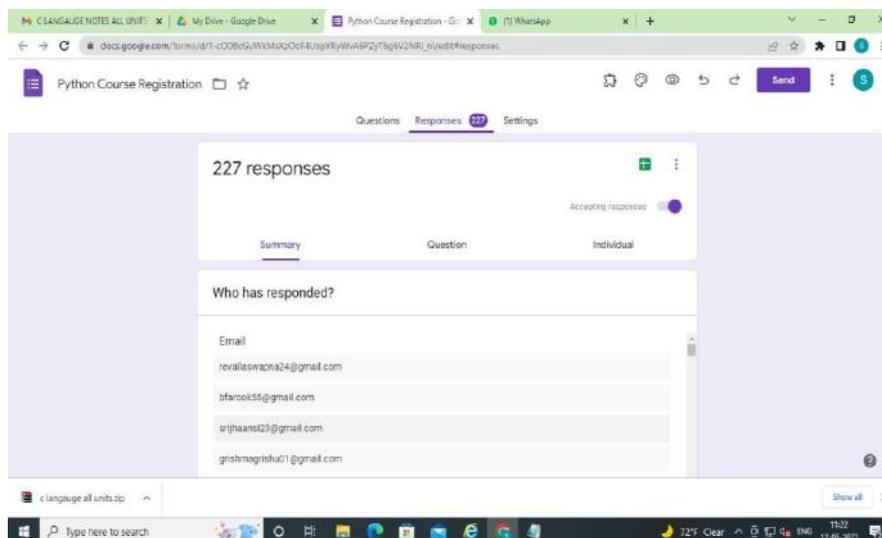To register, Kindly visit the link below:-

**https://forms.gle/B9sBPWSkDBWsV4aBA**

**Total Sessions** – 21

## Target Participants:

➢ Students of B.Sc and B.Com V Sem Students
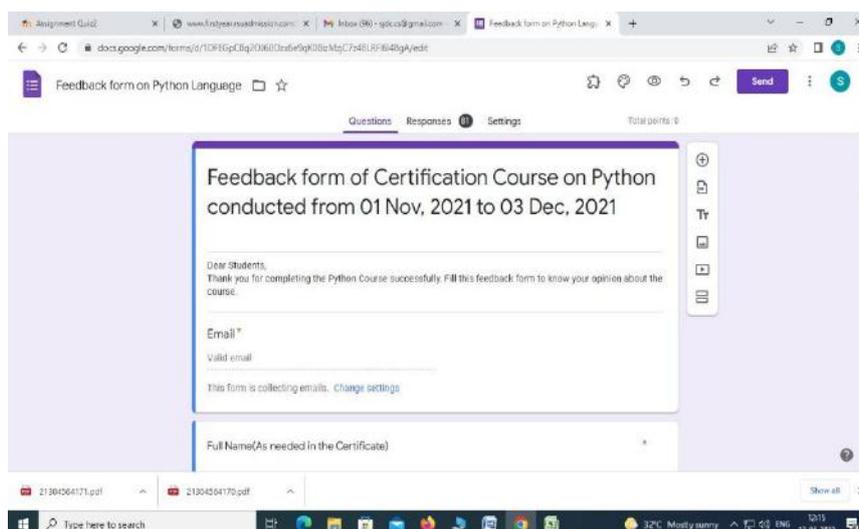
➢ Total No. of Participants : **227 students**



## DURATION:

The Course was conducted from 01-11-2021 to 03-12-2021.

## E-CERTIFICATE ISSUED FOR THE PARTICIPANTS:

## OUTCOMES OF THE COURSE:

At the end of the course, the student will be able to Bloom's Level

1. Explain basic principles of Python programming language
2. Implement object oriented concepts
3. Implement database and GUI applications

## PROGRAM OUTCOME OF THIS COURSE:

1. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

2. Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

3. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## DETAILS OF ONLINE EXAMINATION CONDUCTED IN PYTHON ON SCHEME OF VALUATION AND PATTERN OF QUESTION PAPER

| ONLINE EXAMINATION | | | | |
|---|---|---|---|---|
| Time: 1 Hrs | Max. Marks: 100 | | Min. Marks to pass :40 | |
| **S. No** | **Type of the Questions** | **No. of Questions** | **Marks per Question** | **Total Marks** |
| 1 | Multiple Choice Questions | 20 | 1 | 20 |

# STUDENT'S PERFORMANCE GRAPH



Overall number of students achieving grade ranges
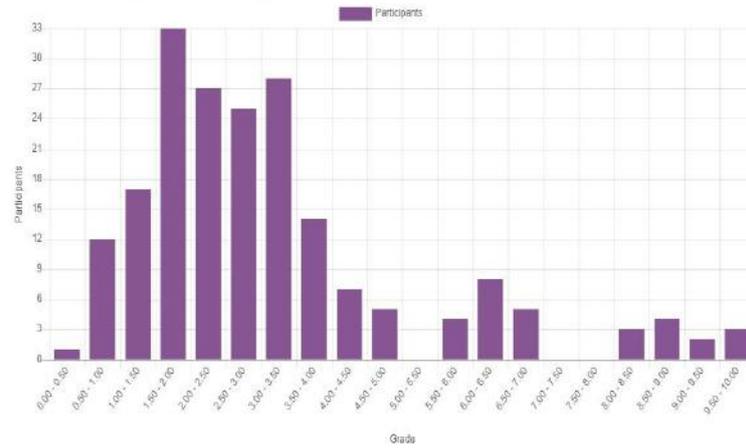
## GALLERY



## PYTHON ONLINE EXAMINATION PHOTO