

**Value Added Course in Electronics and  
Communication Engineering with  
Specialization in  
“Introduction to Machine Learning using  
Python”  
Held On  
10/11/2019 to 15/11/2019**



**Department of Electronics and Communication  
Engineering,  
KG Reddy College of Engineering & Technology**  
Chilkur(Village), Moinabad(Mandal), Hyderabad RR Dist-501504

  
Coordinator

  
Principal  
Principal  
KG Reddy College of Engineering & Technology  
Chilkur (V), Moinabad (M).  
R.R.Dist., Telangana.



## SUMMARY REPORT ON INTRODUCTION TO MACHINE LEARNING USING PYTHON

### About Course

The value added course on Introduction to Machine Learning using Python is concluded its work successfully by department of Electronics and Communication (ECE) in KG ready college of Engineering and technology (KGR CET), Hyderabad, Telangana. This course is a forum to bring together students to discuss innovative ideas and diverse topics of this course on next generation of information technologies. Department has taken a new step for students to improve the quality of study through this course and become most wide scale , extensive, spectacular event in computer science engineering. The six days course was held in two locations of the department (a) Department E-learning room for theory class and (b) Department laboratory for practical class.

Machine Learning using Python is very important aspects, Python like many other programming languages, has different versions. And sometimes when we create software, the software needs to run on a specific version of the language because our software expects a certain behaviour that is present in older versions but changes in newer versions. Likewise, we may need to use specific versions of the libraries for similar reasons. But Python 2.7 and even a more modern Flask app that runs on version 0.12 and Python 3.4.

Exploring data sets and developing deep understanding about the data is one of the most important skills every data scientist should possess. People estimate that time spent on these activities can go as high as the project time in some cases. Python has been gaining a lot of ground as preferred tool for data scientists lately, and for the right reasons. Ease of learning, powerful libraries with integration of C/C++, production readiness and integration with web stack are some of the main reasons for this move lately.

In this course, it will use NumPy, Matplotlib, Seaborn and Pandas to perform data exploration. These are powerful libraries to perform data exploration in Python. The idea is to create a ready reference for some of the regular operations required frequently. It can iPython Notebook to perform data exploration, and would recommend the same for its natural fit for exploratory analysis.

This course is absolutely practical oriented course which is helped to student for making their carrier through python in industry. The students of Final year 2nd semester have been benefited in many ways from this course. Total 31 students have joined in this course as their own interest and completed this course. The trainer taught to students very nice with real time example and sharing his knowledge to develop technical skill in industry.

### Scope of the Course

The role of Python and Machine Learning environment is to be emphasized in computer science and engineering, to enhance and motivate the new technology for wide range of applications. Python can pretty much do the same tasks as R: data wrangling, engineering, feature selection web scrapping, app and so on. Python is a tool to deploy and implement machine learning at a large-scale. Python codes are easier to maintain and more robust than R. Years ago; Python didn't have many data analysis and machine learning libraries. Recently, Python is catching up and provides cutting-edge API for machine learning or Artificial Intelligence. Most of the data science job can be done with five Python libraries:



Numpy, Pandas, Scipy, Scikit-learn and Seaborn. Python, on the other hand, makes replicability and accessibility easier than R. In fact, if you need to use the results of your analysis in an application or website, Python is the best choice.

The bright future for Python learning students:

1. Python has been voted as most favorite programming language beating C, C++ and java programming. Python programming is open source programming language and used to develop almost every kind of application.
2. Python is being used worldwide as a wide range of application development and system development programming language. Big brands and search engine giants are using python programming to make their task easier. Google, Yahoo, Quora, Facebook are using python programming to solve their complex programming problems.
3. Python programming is versatile, robust and comprehensive. Python is high-level programming language and easy to learn as well as it reduces the coding effort compare to other programming languages.
4. Python programming is used to write test scripts and tests mobile devices performance. It is one of the most versatile languages these days. Python programmers are most demandable in the IT industry these days and get paid more compared to another language programmer.

Python, though a newer entrant in the fray, has gained importance than other programming languages and holds a lot of promise for developers. Apart from being an open source programming language, it is also one of the most versatile programming languages. Developers use it extensively for application development and system development programming. Also, reduced coding effort and better test performance ensure better programming. Hence, python developers are very much in demand.

An important feature of this course is very useful in service carrier. The selected topics of this course helped to make project work. This permits also a rapid and broad dissemination of project and research work.

### **Objectives of the course**

The objective of the course is to bring together experts from academic institute and training institute for sharing of knowledge, expertise and experience in emerging trends related to the computer science and engineering topics.

- To understand why Python is a useful scripting language for developers.
- To learn how to design and program Python applications.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To learn how to identify Python object types.
- To learn how to use indexing and slicing to access data in Python programs.
- To define the structure and components of a Python program.
- To learn how to write loops and decision statements in Python.
- To learn how to write functions and pass arguments in Python.
- To learn how to build and package Python modules for reusability.
- To learn how to read and write files in Python.
- To learn how to design object-oriented programs with Python classes.
- To learn how to use class inheritance in Python for reusability.
- To learn how to use exception handling in Python applications for error handling.



- Learn one of the most popular tool for data analytics
- Learn Python Programming basics and essentials, along with machine learning for conducting data analytics in Python
- Hybrid Learning with Guided practice & Weekly Practice quiz questions on the app along with the classroom Sessions
- Hands-on application of the Tools
- App based learning. Connect with Faculty on the App apart from the regular classroom training.
- Data modelling using Machine learning Techniques.

## OUTCOMES

This course was not only shared the knowledge among students but also tied up with expert for upcoming course. It can use different python environment to help on manage workloads for data science, scientific computing, analytics, and large-scale data processing. It can check out on data analysis and machine learning to learn more about various tools available to use and projects that it can do.

1. Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
2. Express different Decision Making statements and Functions
3. Interpret Object oriented programming in Python
4. Understand and summarize different File handling operations
5. Explain how to design GUI Applications in Python and evaluate different database operations
6. Design and develop Client Server network applications using Python
7. Explore different packages of python like numpy, matplotlib, jupyter.
8. Import and apply the packages for application development..
9. Build simple linear and multiple linear regression applications

## Summary of Participants

- (a) Number of students attended this course: 33



**Day-1  
(10-11-19)**

Time: 09:00 AM to 11:00 AM

**Inauguration of value added course**

The first day of value added course started with welcoming and opening ceremony at the KGR CET conference Hall. The following dignitaries were representatives of the value added course who were addressed and pointed out the importance on course with short welcoming speeches.

Welcome addressed by Dr. Pravin Khirsagar, HOD, ECE, KGR CET

About the value added course by Principal Dr. R. S. Jahagirdar, KGR CET.

Resource Person: Arpit Yadav

Time: 11:10 AM to 04:15 PM

The Boot Camp started with a discussion on basics of python programming and then introduction to different machine learning packages used for different applications like numerical calculations, data visualizations, algorithm training.



Mr. Arpit Yadav Giving Introduction about Bootcamp to Students



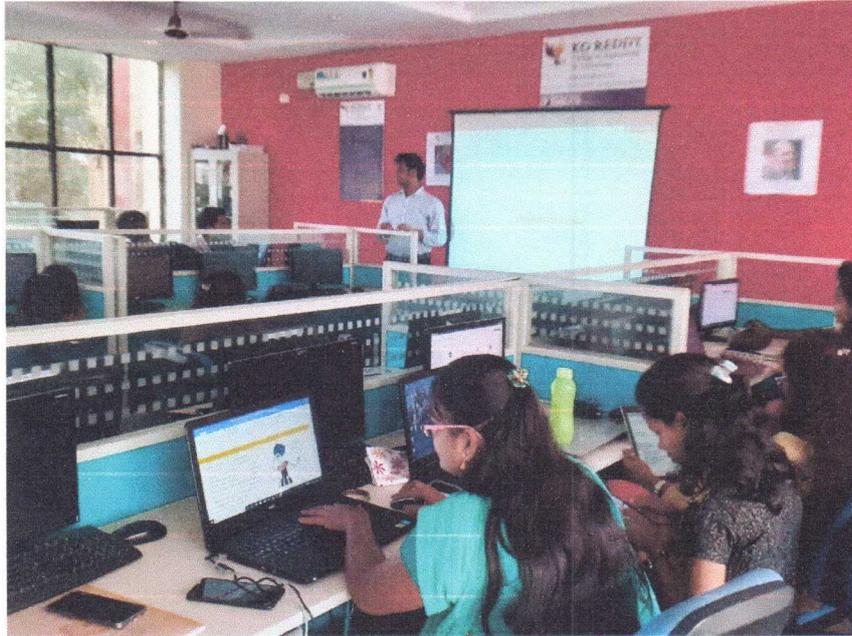
**Day-2**  
**(11-11-19)**

Second day workshop continued with students working on numpy (numerical python) package which is of great use to numerical calculations and pandas library. Students were given examples and asked to solve similar other examples.



**Day-3**  
**(12-11-19)**

Third day the learning continued with matplotlib lib package of python which is mainly used for graphical visualizations. Students were given several hands on experiments to do which was really great fetching to students. It helped them to explore things practically.



Students doing the Practical Hands on Session

**Day-4**  
**(13-11-19)**

Fourth day the program started with the trainer summarizing all the topics and packages covered during three days. Trainer has given few sample projects to work on by using simple linear regression and multiple linear regressions. Students worked on a data set called land prices.

Anaconda Navigator is a desktop graphical user interface (GUI) included in Anaconda® distribution that allows you to launch applications and easily manage conda packages, environments and channels without using command-line commands. Navigator can search for packages on Anaconda Cloud or in a local Anaconda Repository. It is available for Windows, macOS and Linux. In order to run, many scientific packages depend on specific versions of other packages. Data scientists often use multiple versions of many packages, and use multiple environments to separate these different versions.



## Day-5 (14-11-19)

### Setup:

1. Download Anaconda Package Manager
2. Download and install an IDE of your choice (I recommend PyCharm and will use it through out this guide)

Step 1: Create a new environment and link it to your project

There are 2 ways of doing this

1. Create a new Anaconda Environment using Terminal then use that environment when setting up a new project in PyCharm

To create a new environment from terminal use the following command:

```
conda create --name nameofyourEnvironment
```

Or to create a new environment with specific python version use

```
conda create -n nameofyourEnvironment python=3.6
```

More ways of creating environments can be found here.

Once the environment has been created, you can open up the IDE of your choice and select the environment you just created.

For PyCharm this can be done by selecting File New Project. In the new project window click the Existing Interpreter radio button (1) and then select browse



**Day-6**  
**(15-11-19)**



Supervised Learning Project on Machine Learning .

Course Coordinator



**KG REDDY**

College of Engineering  
& Technology

Ref No: KGR CET/CSE/2019-20/

Date: 01/11/2019

**CIRCULAR**

All the students of IV Year I-semester B.Tech ECE are here by informed to enroll for the Value added course (Bootcamp) on “**Introduction to Machine Learning Using Python**”, which is offered by KG Reddy college of Engineering and Technology from 10/11/2019 to 15/11/2019. The students are instructed to contact Dr. Hemanta Kumar Bhuyan for completing their registration before 05/11/2019.

*H/c puha*

HOD HEAD

DEPT. OF ELECTRONICS & COMMUNICATIONS ENGINEERING  
K.G. REDDY COLLEGE OF ENGINEERING & TECHNOLOGY  
CHILKUR (V), MOINABAD, R.R. DIST.501 904



Principal

*Principal*

KG Reddy College of Engineering & Technology  
Chilkur (V), Moinabad (M).  
R.R.Dist., Telangana.

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**KG Reddy College of Engineering & Technology**  
Chilkur, Moinabad, RR District

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Value Added course, Syllabus

KGR CET, Hyderabad

KGRVAC0507: INTRODUCTION TO MACHINE LEARNING USING PYTHON

B.Tech., ECE, IV Year-I Sem

L-30

**Course Objectives**

- (a) Understand Python is a useful scripting language for developers.
- (b) Use lists, tuples, and dictionaries in Python programs.
- (c) Use indexing and slicing to access data in Python programs.
- (d) Define the structure and components of a Python program.
- (e) Design loops and decision statements in Python.
- (f) Define functions and pass arguments in Python.
- (g) Build package Python modules for reusability.
- (h) Design object-oriented programs with Python classes.
- (i) Use class inheritance in Python for reusability.
- (j) Use exception handling in Python applications for error handling.
- (k) Demonstrate different packages of Python useful for data analysis etc..
- (l) Express understanding and apply the knowledge of importing different packages
- (m) Create simple machine learning projects like cost estimation

**Course Outcomes**

At the end of the course, the student will be able to:

- (a) Use if-else statements and switch-case statements to write programs in Python to tackle any decision-making scenario
- (b) Create an entire Python project using objects and classes
- (c) Store and retrieve information using variables
- (d) Develop cost-effective robust applications using the latest Python trends and technologies
- (e) Proficient in Debugging and Version Control
- (f) Build systems entire web development process using various tools
- (g) Create and use APIs to write back-end code
- (h) Explore different packages of python like numpy, matplotlib, jupyter.
- (i) Import and apply the packages for application development
- (j) Build simple linear and multiple linear regression applications

### Module 1

- Introduction to Python
- Install and Import Python Packages
- Installation and Working with Python
- Understanding Python variables

### Module 2

- Python basic Operators
- Understanding python blocks
- Python basic Operators
- Understanding python blocks

### Module 3

- Python Data Types
- Declaring and using Numeric data types: int, float,
- Complex
- Using string data type and string operations

### Module 4

- Defining list and list slicing
- Use of Tuple data type
- Conditional blocks using if, else and elseif
- Simple for loops in python
- For loop using ranges, string

### Module 5

- list and dictionaries
- Organizing python codes using functions
- Organizing python projects into modules
- Importing own module as well as external modules,
- Understanding Packages,

### Module 6

- Powerful Lamda function in python
- Building blocks of python programs
- Understanding string in build methods
- List manipulation using in build methods,
- Dictionary manipulation, Programming using string

### Module 7

- Machine Learning
- Types of Machine Learning

### Module 8

- Supervised Machine Learning
- Unsupervised Machine Learning
- Reinforcement Machine Learning
- Semi supervised Machine Learning

### Module 9

- Regression Learning
- Classification Learning

Signature of Chairman of BOS, ECE

**KG REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**  
*Chilkur (Vill) Moinabad (Mdl) R R Dist*

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**VALUE ADDED COURSES ON INTRODUCTION TO MACHINE LEARNING USING PYTHON**

**Schedule**

**10-11-2019**

**Forenoon (10:00 to 1:00 pm):**

- Introduction to Machine Learning
- Role of Python in Data Analytics
- Importance of python libraries

**Afternoon (1:30 to 4:30pm):**

- Introduction to packages like numpy, pandas, Simple examples on numpy like working with arrays
- Exercises on the topics covered.

**11-11-2019**

**Forenoon (10:00 to 1:00 pm):**

- Introduction to Matplotlib.
- Application areas of Matplotlib.
- Practical examples.
- Hands on practice of the topics covered.

**Afternoon (1:30 to 4:30pm):**

- More examples practice on Matplotlib.
- Introduction to Pandas.
- Examples on pandas.

**12-11-2019**

**Forenoon (10:00 to 1:00 pm):**

- Introduction to scipy.
- Applications of scipy.

**Afternoon (1:3 to4:30pm):**

- Practical examples on scipy.
- Problem statement given to students to apply the concepts and come up with solution.

**13-11-2019**

**Forenoon 10:00 to 1:00 pm)**

- Introduction to machine learning
- Role of machine learning in data analytics
- Different algorithms of machine learning.

**Afternoon (1:3 to4:30pm):**

- Different datasets shared with students.
- Students are explained how to train algorithms using datasets.
- Students are asked to do more examples on the topics.

**14-11-2019**

**Forenoon (10:00 to 1:00 pm):**

- Practical session

**Afternoon (1:3 to4:30pm):**

- Practical examples session

**15-11-2019**

**Forenoon (10:00 to 1:00 pm):**

- Practical session

**Afternoon (1:3 to4:30pm):**

- Practical examples session

## Resource Person Profile

### Arpit Yadav

Mr Arpit Deepak Yadav has done B.E (Electronics & Telecommunication) and M.Tech (VLSI), he is having 8 Years of Experience in VLSI Research. He worked in IT industry but due to interest in Research Field he is currently working as Assistant Professor and mentoring many technocrats. He is Associated with PM Yuva Yojana

#### Core Skills:

**Tools:** Python, VHDL, VLSI Design, Keras, TensorFlow, OpenCV, NLTK.

**Skills:** Data Science Using Python, Machine Learning Using Python, Data Analysis, Data Visualization, Deep Learning, Neural Network, Natural Language Processing (NLP).

He has done certifications in the domain of python, Data Science, Machine Learning, Deep Learning and Artificial Intelligence.

- APTITUDE DEVELOPMENT
- GROUP DISCUSSION
- PERSONAL INTERVIEW / TECHNICAL INTERVIEW
- EXTEMPORE / ELOCUTION / DEBATES
- COUNSELING
- FREQUENT MOTIVATIONAL TALK
- SITUATIONAL CONVERSATION
- RESUME WRITING
- VIDEO RESUME
- COVER LETTER
- ESSAY WRITING
- EMAIL WRITING
- GROOMING
- ACTIVITIES FOR TEAM BUILDING,
- LEADERSHIP QUALITY.
- CHALLENGING / LOGICAL ACTIVITIES ON
- FIELD
- EXPERT TALKS
- ENTREPRENEUR DEVELOPMENT

He is Giving Training to Competitive Examination/ CRT (Campus Recruitment Training). He is given training from last 6 Years. He is Lifetime member of IETE (Institution of Electronics and Telecommunication Engineers, New Delhi). He is CO-OPT Member of IETE, Nagpur Body. He won many Prizes in Group Discussion/Debate Competition during his academic.

He has conducted Many CRT (Campus Recruitment Training) Programmes, Motivational Workshop, and Research Workshop for the development of Students. Out of passion he is having key interest in smart Career Counseling for under graduates for Skilled Development. He is involved in Skills development of students by Smart Career Counseling which will help candidates for overall personality Development.