JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY
(Deemed University)
A-10, Sector 62, Noida, Gautam Buddh Nagar – 201 309 (U.P.)

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An Institution Dedicated to Excellence in Higher Education

Introduces Online Certificate Courses

Machine Learning Using Python: A Practical Approach

Preamble

In the era of Artificial Intelligence (AI) and Machine Learning (ML), now our apps can see, hear, and respond in order to provide better user experience and creating value across many industries.

To implement such aspirations, we need a programming language that is stable, flexible, and has tools available. Python is one of the best fit for such projects because of simplicity flexibility, consistency, access to great libraries and frameworks for machine learning, platform independence, and a wide community. This Course focuses on concept building of machine learning, its implementation and application using Python.

Duration of the Course: 3 Months

Mode of Operation: Online

Number of Lectures of 1 hour duration: 24

Number of Practical Sessions of 1 hour duration: 24

To be covered in each Lecture

Week 1 (L1-L2)	:	Basics of Python: Jupyter (TOOL); Introduction; Environment: Commenting script files, Variable creation, Arithmetic and logical operators, Data types and associated operations
Week 2 (L3-L4)	:	Data Structures: Lists, Tuples, Dictionary, Sets; Numpy: Array, Matrix and associated operations, Linear algebra and related operations
Week 3 (L5-L6)	:	Pandas data frame and data frame-related operations Reading files: Exploratory data analysis, Data preparation and pre-processing; Data visualization using matplotlib and seaborn libraries: Scatter plot, Line plot, Bar plot, Histogram, Box plot, Pair plot; Control structures using Toyota Corolla dataset: if-else family, for loop, for loop with if break, while loop
Week 4 (L7-L8)	:	Introduction of Machine learning, Types of Machine Learning, Issues in designing a machine learning model and methods to handle
Week 5 (L9-L10)	:	Data Pre-processing: Methods and Techniques, Feature Engineering

Week 6 (L11-L12)	:	Linear Regression, Step by Step Calculation of linear Regression; Multiple and Polynomial Regression
Week 7 (L13-L14)	:	Introduction to Support Vector Machine for Classification and Regression, Support Vector Regression
Week 8 (L15-L16)	:	Classification, Logistic Regression, Step-by-step calculation of Logistic regression, Estimating parameters and hypothesis testing with linear models
Week 9 (L17-L18)	:	K-Nearest Neighbours (K-NN); Support Vector Machine for Classification
Week 10 (L19-L20)	:	Random Forest for Classification and Regression
Week 11 (L21-L22)	:	Unsupervised Machine Learning: Clustering, Methods and application, Types of Clustering algorithms, K-Means clustering
Week 12 (L23-L24)	:	DBSCAN Clustering, Hierarchical Clustering

To be covered in each Practical Session

Week 1 (P1-P2)	:	Basics of Python: Jupyter (TOOL); Environment: Commenting script files, Variable creation, Arithmetic and logical operators, Data types and associated operations
Week 2 (P3-P4)	:	Data Structures: Lists, Tuples, Dictionary, Sets; Numpy: Array, Matrix and associated operations, Linear algebra and related operations
Week 3 (P5-P6)	:	Pandas data frame and data frame-related operations Reading files: Exploratory data analysis, Data preparation and pre-processing
Week 4 (P7-P8)	:	Data visualization using matplotlib and seaborn libraries: Scatter plot, Line plot, Bar plot, Histogram, Box plot, Pair plot; Control structures using Toyota Corolla dataset: if-else family, for loop, for loop with if break, while loop
Week 5 (P9-P10)	:	Data Pre-processing
Week 6 (P11-P12)	:	Linear Regression, Multiple and Polynomial Regression, Feature Engineering
Week 7 (P13-P14)	:	Introduction to Support Vector Machine for Classification and Regression, Support Vector Regression
Week 8 (P15-P16)	:	Logistic Regression for Classification, Estimating parameters and hypothesis testing with linear models
Week 9 (P17-P18)	:	K-Nearest Neighbours (K-NN) and Support Vector Machine for Classification
Week 10 (P19-P20)	:	Random Forest for Classification and Regression
Week 11 (P21-L22)	:	Applications of K-Means clustering
Week 12 (L23-L24)	:	DBSCAN Clustering, Hierarchical Clustering

Pre-requisite: Preliminary knowledge of mathematics and programming

Schedule of the Classes: Saturday – 2 hrs and Sunday – 2 hrs

Nature of the Course: Introductory: Introductory

Name of the Faculty Coordinators: Dr. Anita Sahoo, Dr. Ashish Mishra

Name(s) of the Faculty to be involved in conduction of the Course: Dr. Anita Sahoo, Dr. Ashish Mishra

Target Participants: Professionals working in industry/Job seekers/Current Senior students who wish to upgrade their professional skills

Minimum Qualifications for participants: Preferably Undergraduate in any specialization also pursuing Undergraduate degree will also be considered

IPR Rights of the Content: JIIT

Mode of evaluation of the participants after every 7-10 Lecture Sessions: Online

Mode of evaluation of the participants after 3-4 Practical Sessions: Online

For course related query please mail to:
Dr. Anita Sahoo: *anita.sahoo@jiit.ac.in* Dr. Ashish Mishra: *ashish.mishra@jiit.ac.in*
For course registration, please click the link:
https://forms.gle/AkVidsjMp5ArfwNj7