

Certificate Course in Machine Learning with SciKit Learn Course Code: ITSTCC03

Objective of the Course: The course is designed to help the students to learn machine learning.

Course Outcome: After successful completion of the course a student will be able to develop applications using machine learning.

Minimum Eligibility Criteria: Basic Object oriented programming, working with IDE.

Course Duration: 3 Months

Course fees: Rs. 1000/- per month for three months.

Total marks: (100 + 100 + 100)

Syllabus:

Module I

Introduction to Python. Fundamental data types and data structures, Organizing code with functions, modules and packages, Loading packages, namespaces, Reading and writing data, Control flow. Numerical Analysis and Data Exploration with NumPy Arrays, Selecting data using slicing and logical indexing, Efficient numerical processing with multi-dimensional arrays, Expressive array operations and manipulations, Loading from CSV and other structured text formats, Accessing data stored in SQL databases, 1D and 2D data structures: Series and DataFrame, Stripping out extraneous information, Normalizing data, Dealing with missing data, Data manipulation (alignment, aggregation, and summarization), Group-based operations: split-apply-combine, Statistical analysis, Date and time series analysis with Pandas, Visualizing data.

Module II

Machine Learning- Linear and nonlinear models, Constant and variable learning-rates Cost functions, regularization methods, and other constraints, Fitting, transforming, and predicting, Logarithmic and curvilinear transforms, Data scaling, Outliers, Linear regressors, l1 and l2 normalization, Support vector machines (SVM), Contrast encoding, Missing values, Categorical rebinning, Linear classifiers, Tree-based classifiers, Ensemble methods, Boosting methods, Unbalanced designs

Module III

Image storage formats, Scikit-image, Smoothing and de noising, Edge detection, Feature-based segmentation, K-means clustering.