

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Internal	Final Exam	Total
MCA-303	Machine Learning using Python	PCC	4	4	0	0	40	60	100

Course Outcomes

At the end of the course the student will be able to	
CO1	Understand the state-of-the-art methods and modern programming tools for data analysis.
CO2	Understand complexity of Machine Learning algorithms and their limitations.
CO3	Understand modern notions in data analysis-oriented computing.
CO4	Implement various packages of python library.
CO5	Perform experiments in Machine Learning using real-world data using python.

Detailed Syllabus**Section-A**

UNIT-1: Introduction to Machine Learning: Types of machine Learning: supervised, unsupervised, semi supervised and reinforcement learning, Steps in the design of learning system, Training and testing, Cross Validation, Feature Reduction/Dimensionality reduction, Performance prediction parameters, Applications of machine learning.

(10Hrs)

UNIT-2: Types of Machine Learning : Supervised Learning, Labelled data, Classification and its algorithms: Naive-Bayes classifier, Decision trees, Support vector machines, Principal component analysis: Eigen values, Eigen vectors, Orthogonality, Artificial Neural Networks and its types, Unsupervised Learning, Unlabeled data, Clustering and its types: Hierarchical, Fuzzy, Density based, Distance based, Model based, K-means clustering, Nearest Neighbour.

(10Hrs)

UNIT-3: Genetic Algorithm and Deep Learning: Introduction, Q learning, Temporal Difference Learning, Learning from Examples, Reward Hypothesis. Genetic algorithm: Introduction, Steps involved in genetic algorithm, Applications of genetic algorithm, Introduction to Deep learning concepts, Tools and Platforms

(10Hrs)**Section-B**

UNIT-4: Introduction to Python: Data Types, variables and basic Operators. Understanding python blocks and complex data types: Strings, Sequence types: Tuples, named tuples, lists, Set Types: Sets, Frozen sets, Mapping types: dictionaries, iterating and copying collections and arrays, Python Program Flow Control Conditional blocks if, else and else if, Simple for loops in python, for loop using ranges, string, list and dictionaries, Exceptions.

(10Hrs)

UNIT-5: Introduction to Machine Learning using python and Deep Learning: Classification and Prediction, Text Identification, Introduction to Scikit Learn, Python libraries: Pandas, NumPy, Matplotlib etc, Introduction to Deep learning concepts. Tools and Platforms (Tensor flow, Keras etc.).

(10Hrs)**Textbooks**

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Machine Learning, A Probabilistic Perspective	Kevin Murphy.	MIT Press	2nd(2012)
2	Core Python Programming	R. Nageswara Rao	Dreamtech Press	3rd(2021)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Hands-On Machine Learning with Scikit-Learn, Keras, and Tensor Flow	Aurelian Géron Aurélien Géron	O'Reilly	3rd(2022)