JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J. T. LALVANI COLLEGE OF COMMERCE
AUTONOMOUS

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: M.Sc. Big Data Analytics

Semester III

Credit Based Semester and Grading System (CBSGS) with effect from the academic year 2022-23

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20 AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

M.Sc. Big Data Analytics Sem III Syllabus	
Objectives:	• To understand and use the Technologies of Scala, Spark and PySpark for handling data • To learn the different possibilities to deploy large scale machine learning. • To identifying the data outliers. • To apply Binomial Model in real life Put Call parity problems and also understand model working procedure by simulated data. • To get introduced to the basic concepts of Bioinformatics and its significance in Biological data analysis.
Outcomes:	• Understands research concepts of using spark and pyspark for data analysis. • Students learn the difference between machine learning and deep learning and their suitability to different scenarios. • Students also understand several preprocessing, cross validation and evaluation techniques for different machine learning algorithms • creative visualization for decision making data • Optimize portfolio on the collected historical Sensex data of different company for giving maximum return with minimum risk. • Understands the methods to characterize and manage the different types of Biological data.

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J. T. LALVANI COLLEGE OF COMMERCE
AUTONOMOUS

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: M.Sc. Big Data Analytics

Course: Enabling Technologies for Data Science-II

Semester III

Credit Based Semester and Grading System (CBSGS) with effect from the academic year 2022-23

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

M.Sc. Enabling Technologies for Data Science-II Syllabus

Semester III

Course Code	Course Title	Number of Lectures	No. of Credits
SBDA301	**Enabling Technologies for Data Science-II**	**60**	**3**
Spark, Scala, Mahout.			
References: NONE			
Evaluation: Practical / Lab : 100%			

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J. T. LALVANI COLLEGE OF COMMERCE
AUTONOMOUS

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: M.Sc. Big Data Analytics

Course: Machine Learning-II

Semester III

Credit Based Semester and Grading System (CBSGS) with effect from the academic year 2022-23

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

M.Sc. Machine Learning-II Syllabus

Semester III

Course Code	Course Title	Number of Lectures	No. of Credits
SBDA302	Machine Learning-II	60	3

Decision Tree Classification:
Entropy, Gini index, Algorithms, Regression Trees.

Probabilistic Classifiers:
Generative and Conditional classifiers.

Hyper plane classifiers:
Loss functions, stochastic gradient algorithms, Perceptron algorithms.

Application of to Pattern Recognition Problems.

Clustering:
Performance criteria, K-means clustering, EM algorithm

a) Collaborative filtering

b) Combining models

c) Probabilistic graphical models

d) Large Scale Machine Learning: Gradient descent with large data sets

e) Genetic Algorithm.

References:

1. Machine Learning: Tom Mitchell

Evaluation: Theory: 50% + Practical/Lab : 50%

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20 AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J. T. LALVANI COLLEGE OF COMMERCE
AUTONOMOUS

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: M.Sc. Big Data Analytics

Course: Exploratory Data Analysis

Semester III

Credit Based Semester and Grading System (CBSGS) with effect from the academic year 2022-23

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

M.Sc. Exploratory Data Analysis Syllabus

Semester III

Course Code	Course Title	Number of Lectures	No. of Credits
SBDA303	Exploratory Data Analysis	**60**	**3**

Data Visualization with Tableau

Learn about design principles, human perception and effective story telling with data, dashboards, modern visualization tools and techniques (cover Tableau).
Hands-on practice on Tableau is must.

Modelling in Operations Management

a) Banking analytics

b) Healthcare analytics

c) Retail analytics

d) Venture analytics

e) Marketing analytics

f) Supply chain analytics

References: NONE

Evaluation: Practical / Lab / Report: 100%

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J. T. LALVANI COLLEGE OF COMMERCE
AUTONOMOUS

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: M.Sc. Big Data Analytics

Course: Introduction to Econometrics and Finance

Semester III

Credit Based Semester and Grading System (CBSGS) with effect from the academic year 2022-23

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20. AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

M.Sc. Introduction to Econometrics and Finance Syllabus

Semester III

Course Code	Course Title	Number of Lectures	No. of Credits
SBDA304A	**Introduction to Econometrics and Finance**	**60**	**3**

a) Analysis of Panel Data.

b) Generalized Method of Moments (GMM).

c) Simultaneous Equations System:
Least Squares, Bias Problem, Estimation Method.

d) Cointegration:
Concept, two variable model, Engle-Granger Method, Vector auto regressions (VAR), Vector error correlation model (VECM).

e) ARCH/GARCH/SV models, some important generalizations like EGARCH & GJR models, ARCH –M models.

References:

1. The Econometrics of Financial Markets: J. Campbell, A.Lo and C. Mackinlay
2. Econometric Analysis: William H. Greene

Evaluation: Theory: 70% + Practical/Lab: 30%

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20 AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J. T. LALVANI COLLEGE OF COMMERCE
AUTONOMOUS

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: M.Sc. Big Data Analytics

Course: Big Data Technologies and Architecture and Introduction to Bioinformatics

Semester III

Credit Based Semester and Grading System (CBSGS) with effect from the academic year 2022-23

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20 AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE

M.Sc. Big Data Technologies and Architecture and Introduction to Bioinformatics Syllabus

Semester III

Course Code	Course Title	Number of Lectures	No. of Credits
SBDA305B	Big Data Technologies and Architecture and Introduction to Bioinformatics	**60**	**3**

a) **Sequence Alignments.**

b) **Advance Alignment Methods.**

c) **Gibbs Sampling.**

d) **Population Genomics.**

e) **Genetic Mapping.**

f) **Disease Mapping.**

g) **Gene Recognition.**

h) **Transcriptome & Evolution.**

i) **Protein Structure.**

j) **Protein Motifs.**

k) **Hidden Markov Model.**

l) **Lattice Model.**

m) **Algorithms.**

References:

1. Introduction to Computational Molecular Biology: C. Setubal & J. Meidanis, PWS Publishing, Boston, 1997

Evaluation: Theory: 50% + Practical/Lab: 50%

JAI HIND COLLEGE 'A' Road Churchgate Mumbai-20 AUTONOMOUS

PRINCIPAL
JAI HIND COLLEGE