

**SYLLABI**

**For**

**Value Added Course:**

**Certificate Course in Introduction to Data Driven**

**(w.e.f. 10/04/2023)**

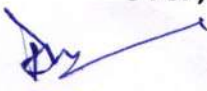
**Offered by**


**Department of Information Communication and Technology**

**TECNIA INSTITUTE OF ADVANCED STUDIES**

**GRADE 'A' INSTITUTE**

**3 PSP, Institutional Area, Sector – 14, Rohini, Delhi - 110085**

  
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INTERNAL QUALITY ASSESSMENT CELL (IQAC)  
TECNIA INSTITUTE OF ADVANCED STUDIES  
NEW DELHI - 110085

**Syllabus**  
**For**  
**Value Added Course**

Course Code: BCA - 280

**Course Name: Certificate Course in Introduction to Data Driven**

**LEARNING OBJECTIVES:**

This course will provide the learners the following: -

- To enable students, develop IT skills that are a pre-requisite in today's work environment.
- To equip them with basic computing skills that will enhance their employability in general.
- To enable the student to analyze and present information in a meaningful manner.

**PRE-REQUISITES:** None

**COURSE OUTCOMES:**

After completion of this course, the learners will be able to:-

- Programming & working with data.
- Conduct a wide range of statistical test.
- Understand machine learning algorithm.

Unit 1

No. of Hours: 7

Introduction To Data Driven, Understand The Concept Of Data-Driven Decision Making, Importance In Various Domains. Scipy Stack, Identify Different Types Of Data, Characteristics And Properties Of Data. Statistical Methods For Decision Making. Exploratory Data Analysis, Uncover Patterns, Trends, And Relationships In The Data Using Descriptive Statistics And Visualization Techniques.

Unit 2

No. of Hours: 7

Data Preprocessing, Basic Statistical Concepts And Techniques, Feature Selection, Fundamentals Of Data Visualization, Effectively Communicate Data Insights Through Charts, Graphs, And Other Visual Representations. Predictive Modelling, Develop Skills In Data Interpretation And Critical Thinking To Make Informed Decisions Based On Data Analysis.

  
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Unit 3

No. of Hours: 8

Machine Learning Algorithm , Time Series Forecasting Logistic Regression , K-Nearest Neighbors (K-NN) , Support Vector Machines (SVM) , Decision Trees And Random Forests , Evaluation Metrics: Accuracy, Precision, Recall, F1-Score, ROC Curve , Simple Linear Regression , Multiple Linear Regression , Evaluation Metrics: Mean Squared Error, R-Squared

Unit 4

No. of Hours: 8

Data Mining , Natural Language Process , Introduction To Data Mining , Definition And Scope Of Data Mining , Data Mining Process And Lifecycle , Applications Of Data Mining In Various Domains, Data Preprocessing , Data Cleaning , Data Integration , Data Transformation , Data Reduction , Classification , Decision Trees , Naive Bayes Classifier , K-Nearest Neighbors (K-NN) , Support Vector Machines (SVM) , Evaluation Metrics For Classification.

**TEXT BOOK:**

1. "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géron, 2016.
2. "Python Data Science Handbook" by Jake VanderPlas, 2016.
3. "Data Mining: Concepts, Models, Methods, and Algorithms" by Mehmed Kantardzic Publication Hadley Wickham. 2015

**REFERENCE BOOK:**

1. "Python for Data Analysis" by Wes McKinney, 2014.
2. "Data Science for Business" by Foster Provost and Tom Fawcett, 2014.
3. "Data Science from Scratch: First Principles with Python" by Joel Grus, 2015.

**Evaluation Pattern:** On the basis of practical exam followed by viva

  
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