Information Booklet cum Syllabus

Of

Business Intelligence using Tableau and Power BI

Revision-I

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National Institute of Electronics and Information Technology

An Autonomous Scientific Society under
Ministry of Electronics and Information Technology, Government of India

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1. About Course

This course teaches to master the concepts of Python programming, data analysis and machine learning. In this course, student will gain knowledge in data analysis, Machine Learning and Data Visualization. After the course, student will master the essential tools of Data Science with Python.

2. NIELIT

National Institute of Electronics and Information Technology, NIELIT, (Erstwhile DOEACC Society) is an autonomous scientific society of the Ministry of Electronics& Information Technology, Government of India. The Society is registered under the Societies Registration Act, 1860. NIELIT was set up to carry out Human Resource Development and related activities in the area of Information, Electronics & Communications Technology (IECT). NIELIT is engaged both in Formal & Non-Formal Education in the areas of IECT besides development of industry oriented quality education and training programmes in the state-of-the-art areas. NIELIT has endeavored to establish standards to be the country's premier institution for Examination and Certification in the field of IECT. It is also one of the National Examination Body, which accredits institutes/organizations for conducting courses in IT and Electronics in the non-formal sector.

3. Objective of Course

Through this training, student will gain knowledge in data analysis, Machine Learning and data visualization.

After completing the module, the learner will be able to:

- Understand the importance of data visualization in decision-making and communication
- Learn to clean, analyze, and visualize data effectively using Microsoft Excel
- Gain hands-on skills in building interactive dashboards with Power BI
- Explore powerful visual storytelling using charts and maps in Tableau
- Connect and transform data from multiple sources (Excel, databases, etc.)
- Apply best practices in visual design for clarity and impact
- Compare and choose the right tool (Excel, Power BI, or Tableau) based on project needs
- Create and publish dashboards to share insights with stakeholders and teams

4. Job Roles of Course

This Course is designed to equip a learner with necessary skills as per following job roles:

- Junior Data Analyst

5. Eligibility

Pursing Diploma/Graduation.

6. Total duration of the Course

30 Hours (Theory: 12 Hrs, Practical/Tutorial: 18 Hrs)

7. Course Details

7.1. Course Outline and Objective of Each Unit

S. No.	Unit Name	Duration (Theory) in Hours	Duration (Practical) in Hours	Total Learning Hrs.	Learning Objectives
1	**Module 1: Data Visualization using Power BI**	6	9	15	After completion of this unit of module, the Learner will be able to: ● Understand the need and importance of Data Visualization in decision-making ● Gain hands-on experience with Power BI Interface, including its core components ● Connect Power BI to various data sources such as Excel, CSV, and databases Design data dashboards and publish them to the Power BI Service.
2	**Module 2: Data Visualization using Tableau**	6	9	15	After completion of this unit of module, the Learner will be able to: ● Understanding the fundamentals and importance of data visualization analytics. ● Get familiar with the Tableau Interface and its key components. Learn classification problem like loan prediction.

					• Combine multiple visualizations to design interactive dashboards. • Apply best practices in visual design to present data clearly and effectively.

7.2. Detailed Syllabus

Unit Name	Contents	Hrs.
Module 1: Data Visualization using Power BI	• Connect to multiple data sources like Excel, CSV, and SQL with ease • Clean, transform, and model data using Power Query • Create dynamic visualizations – charts, maps, and dashboards • Build interactive reports with slicers, filters, drill-downs, and tooltips • Publish and share dashboards securely via Power BI Service • Gain insights from data using visual storytelling techniques • Learn real-world business use cases: sales, finance, HR analytics	**15**

Module 2: Data Visualization using Tableau	● Dive into data by connecting Tableau with files, databases, or cloud sources effortlessly ● Explore and shape raw data visually with drag-and-drop simplicity ● Transform numbers into stunning visuals like heatmaps, treemaps, and interactive maps ● Build dashboards that respond to clicks, filters, and user selections in real time ● Create powerful calculations, rankings, and KPIs without writing complex code ● Tell compelling data stories that highlight patterns, trends, and outliers ● Publish interactive dashboards online to share insights with teams or clients	**15**

8. Practical Assignments

Assignment 1: Power BI

Connect an Excel file containing employee data to Power BI
● Load the data and view the columns in the data model

Create visuals:
● Bar chart for Department-wise average salary
● Card visual showing total number of employees

Use **Power Query Editor** to:
● Remove null values
● Split a column (Full Name → First Name, Last Name)

Design a dashboard that includes:
● Pie chart for employee distribution by department
● Table showing Name, Department, and Salary
● Slicer for filtering by Department

Assignment 2: Tableau

Connect Tableau to an Excel file named "Sales.xlsx"
- Load and preview the data
- Rename sheet as “Sales_2024”

Create a bar chart showing:
- Product Names on X-axis
- Total Sales on Y-axis

Add interactivity to a dashboard:
- Add a filter to select Region
- Use a drop-down to filter chart by Region

Use Tableau’s **calculated field** feature to:
- Create a field named "Profit Margin" = Profit / Sales
- Display this field in a table chart

Create a **Map Visualization**:
- Show sales distribution across different states
- Use color intensity to reflect higher/lower sales