

(I) INTRODUCTION & PREAMBLE

1. The name of the programme shall be **Data Visualization and Communication with Tableau**.
2. The **Data Visualization and Communication with Tableau** Programme will be a part-time Three-Year B. Com. It will consist of 2 papers adding up to 200 marks (including Practical and Project Work).

PREAMBLE

One of the skills that characterizes great business data analysts is the ability to communicate practical implications of quantitative analyses to any kind of audience member. Even the most sophisticated statistical analyses are not useful to a business if they do not lead to actionable advice, or if the answers to those business questions are not conveyed in a way that non-technical people can understand.

Tableau is a widely used business intelligence (BI) and analytics software trusted by companies like Amazon, Experian, and Unilever to explore, visualize, and securely share data in the form of Workbooks and Dashboards. With its user-friendly drag-and-drop functionality it can be used by everyone to quickly clean, analyse, and visualize your team's data.

In this course students will learn how to become a master at communicating business-relevant implications of data analyses. By the end, students will know how to structure data analysis projects to ensure the fruits of their hard labour yield results for the stakeholders. Students will also know how to streamline their analyses and highlight their implications efficiently using visualizations in Tableau, the most popular visualization program in the business world. Using other Tableau features, students will be able to make effective visualizations that harness the human brain's innate perceptual and cognitive tendencies to convey conclusions directly and clearly. Finally, students will be practiced in designing and persuasively presenting business "data stories" that use these visualizations, capitalizing on business-tested methods and design principles and by the end of this training, students will have the skills needed to confidently explore Tableau and build impactful data dashboards.

Course Purpose and Prerequisites

The purpose of this course is to teach dashboard and data visualization technologies. There is no prerequisite for this course and knowledge of any specific technical skills is not required. However, a basic understanding of data and reporting will be helpful.

Course Goal and Objectives

The goal of this course is to teach you how to use dashboards and data visualization for presenting and analysing data and, also, how to use a data visualization tool for this purpose.

Learning Objectives By the end of this Course, Students will be able to:

- Explain dashboard elements, characteristics, and features
- Explain scorecard objectives, characteristics, and balanced scorecard
- Explain common dashboard and scorecard characteristics, differences, benefits and shortcomings
- Explain key performance indicators and how to design them
- Explain the dashboard process, architecture and requirements, as well as design principles
- Explain data visualization and identify common data visualization types
- Design dashboard displays, identify presentation options, and learn how to make dashboards work effectively
- Identify common design mistakes as well as problems with real-time operational dashboards
- Identify the best practices for dashboards and scorecards
- Avoid common problems and mistakes
- Evaluate dashboard tools and vendors

(II) ELIGIBILITY FOR ADMISSION:

A student seeking admission to this course must have passed any one of the following qualifications:

- 12th Std. examination (H.S.C. 10 +2) from any stream.
- Three Years Diploma after S.S.C. i.e. 10th Standard of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- Two Years Diploma in Pharmacy after H.S.C., of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- Under Graduate or Post Graduate students of Shri Shiv Chhatrapati College from any stream.

(III) NUMBER OF LECTURES AND PRACTICAL:

Lectures and Practical should be conducted as per the scheme of lectures and practical indicated in the course structure.

(IV) PRACTICAL TRAINING AND PROJECT WORK:

As a part of the course, students will have to complete their Practical & Project work under guidance of an Internal Guide. The project should consist of a practical problem related to an industrial / service organization. The Practical and Project Work will be assessed by the institution internally and the marks allotted for the project should be included in the marks for the paper of the Data Visualization and Communication with Tableau Programme.

(V) ASSESSMENT:

There will be 2 Credits for this Data Visualization and Communication with Tableau Programme.

- a) 1 Credit = 15 Lecture Hours

b) Marks 100

c) SUBJECT - THEORY : 1 CREDITS PROJECT & PRACTICAL: 1 CREDIT

Credit hours are based on the number of "contact hours" per week in class, for one term;

The final total assessment of the candidate is made in terms of an Internal Assessment of Project & Practical.

These marks will be considered for the declaration of the results for the Award of Degree of Savitribai Phule Pune University, Pune.

(VI) EXAMINATION:

Examinations shall be conducted after completion of the Programme.

(VII) STANDARD OF PASSING:

Every candidate must secure at least Grade E in the Evaluation for passing

Conversion of Marks to Grade Points & Grades: The marks shall be converted to grade points and grades using Table I below.

Table I: Points Grading System

Sr. No.	Marks	Grade	Grade Point
1	100 - 75	O - Outstanding	06
2	74 - 65	A - Very Good	05
3	64 -55	B - Good	04
4	54 - 50	C - Average	03
5	49 - 45	D - Satisfactory	02
6	44 - 40	E - Pass	01
7	39 - 0	F - Fail	00

REASSESSMENT OF INTERNAL MARKS:

In case of those who have secured less than passing percentage of marks in internal i.e. less than 40%, the institute will administer a separate internal test. The results of which may be conveyed to the University as the Revised Internal Marks.

In case the result of the revised internal test is lower than the original marks then the original marks will prevail. In short, the rule is higher of the two figures should be considered.

However, the institute will not administer any internal test, for any subject for those candidates who have already secured 40% or more marks in the internal examination.

(VIII) BOARD OF PAPER SETTERS /EXAMINERS:

For each examination there will be one board of Paper Setters and Examiners for the course. While appointing paper setter /examiners, care should be taken to see that there is at least one person

specialized in course.

IMPORTANT NOTE:

If a student secures F grade in either or both of Concurrent Evaluation or University Evaluation for a particular course

his /her credits earned for that course shall be ZERO.

(IX) MEDIUM OF INSTRUCTION:

The medium of Instruction will be English.

(X) CLARIFICATION OF SYLLABUS:

It may be necessary to clarify certain points regarding the course. The syllabus Committee should meet at least once in a year to study and clarify any difficulties from the Institutes.

(XI) REVISION OF SYLLABUS:

As the computer technology is changing very fast, revision of the syllabus should be considered every 1 years.

(XII) SYLLABUS:

Sr. No.	Content	No. of Periods
1	Understanding Data What is data Where to find data Foundations for building Data Visualizations	2
2	Creating Your First visualization Getting started with Tableau Software Using Data file formats Connecting your Data to Tableau Creating basic charts (line, bar charts, Tree maps) Using the Show me panel	5
3	Tableau Calculations Overview of SUM, AVR, and Aggregate features Creating custom calculations and fields Applying new data calculations to your visualization	3
4	Formatting Visualizations Formatting Tools and Menus Formatting specific parts of the view Editing and Formatting Axes	2
5	Manipulating Data in Tableau Cleaning-up the data with the Data Interpreter Structuring your data Sorting and filtering Tableau data Course Syllabus Tableau Level I 1 Pivoting Tableau data	5
6	Advanced Visualization Tools Using Filters Using the Detail panel Using the Size panels Customizing filters	5

	Using and Customizing tooltips Formatting your data with colours	
7	Creating Dashboards & Stories Using Storytelling Creating your first dashboard and Story Design for different displays Adding interactivity to your Dashboard	4
8	Distributing & Publishing Your Visualization Tableau file types Publishing to Tableau Online Sharing your visualization Printing and exporting	4

(XIII) Course Outcome:

After Completion of the course students will Learn

1. Understanding Data
2. Creating First visualization
3. Tableau Calculations
4. Formatting Visualizations
5. Manipulating Data in Tableau
6. Advanced Visualization Tools
7. Creating Dashboards & Stories
8. Distributing & Publishing Your Visualization

Reference Book:

1. <https://www.tableau.com/resources>
2. "Information Dashboard Design: Displaying Data for At-a-glance Monitoring" by Stephen Few, Analytics Press.
3. "Beautiful Visualization, Looking at Data Through the Eyes of Experts by Julie Steele, Noah Iliinsky"
4. "The Accidental Analyst: Show Your Data Who's Boss" by Eileen and Stephen McDaniel
5. "The Functional Art" by Alberto Cairo
6. "The Visual Display of Quantitative Information" by Edward R. Tufte
7. "Cartographies of Time: A History of the Timeline" by Daniel Rosenberg, Anthony Grafton
8. "Information Graphics" by Sandra Rendgen, Julius Wiedemann
9. "Visual Thinking for Design" by Colin Ware
10. "Storytelling With Data: A Data Visualization Guide for Business Professionals" by Cole Nussbaumer Knaflic
11. "Knowledge is Beautiful" by David McCandless

12. "Visualize This: The Flowing Data Guide to Design, Visualization, and Statistics" by Nathan Yau
13. "The Big Book of Dashboards" by Steve Wexler, Jeffrey Shaffer, and Andy Cotgreave
14. Practical Tableau: **Author:** Ryan Sleeper
15. Tableau Cookbook - Recipes for Data Visualization Author: Shweta Sankhe-Savale
16. Tableau for Dummies (For Dummies (Computer/Tech)) Authors: Molly Monsey and Paul Sochan
17. Tableau Dashboard Cookbook Author: Jen Stirrup
18. Tableau: Creating Interactive data visualizations Author Jen Stirrup
19. Mastering Tableau 2021: Implement advanced business intelligence techniques and analytics with Tableau, 3rd Edition. Author: Marleen Meier and David Baldwin
20. Learning Tableau 2020 Author: Joshua N. Milligan
21. Tableau Strategies: Solving Real, Practical Problems with Data Analytics Author: Luke Stanke and Ann Jackson Publisher: O'Reilly