



# DATA VISUALIZATION TECHNIQUES

**DCA-207** 

### COURSE DESIGN, PREPARATION AND REVIEW TEAM

Prof. T.K. Jain Dr. Ankur Jain, Director, Director,

CDOE SGVU Jaipur CIQA, SGVU Jaipur

Prof. P.K. Sharama Ms. Shikha Srivastava, Rtd. Professor Assistant Professor,

VMOU Kota Dept. of Computer Applications, SGVU

Dr. Ajay Vardhan Dr. Kriti Shrivastav Regional Director Assistant Professor IGNOU Aligarh(UP) CIQA SGVU Jaipur

Dr. Aman Sharma,
Assistant Professor,
Ms. Isha Sharma,
Assistant Professor,

CDOE, SGVU Dept. of Computer Applications, SGVU

Dr. Ranjan Upadhyaya, Professor,
Department of Management Studies,
Vivekananda Global University, Jaipur

Ms. Sonika Katta,\*
Assistant Professor,
Dept. of Computer Applications, SGVU

Dr. Vijay Sharma, HOD, Centre for Rural Empowerment and Development,

Mr. Satyanand Gora, Assistant Professor,

Government Engineering College, Bikaner Dept. of Computer Applications, SGVU

Dr. Vishal Goar Dr. Lata Suresh,

Dean Research

Director, Indian Institute of Corporate

Bikaner Technical University, Bikaner.

Affairs, (Ministry of Corporate Affairs)

Gurugram

Program CoordinatorCourse Coordinator and editorDr. Anil Pal\*,Dr. Sohit Agarwal\*,Associate ProfessorAssociate Professor,CDOE, SGVU JaipurCDOE, SGVU, Jaipur

**Acknowledgement :** The persons marked with (\*) are the authors

#### PRINT PRODUCTION

Mahendra Sharma Assistant Registrar SGVU Jaipur

Published in: November, 2024

#### ISBN (Awaited)

**©SGVU**. All rights reserved. No part of this work may be reproduced in any form, by mimeograph or any other means, without permission in writing from the SGVU.

Published by:

S. B. Prakashan Pvt. Ltd.

WZ-6, Lajwanti Garden, New Delhi: 110046 Tel.: (011) 28520627 | Ph.: 9625993408

Email: info@sbprakashan.com | Web.: www.sbprakashan.com

BLOCK 1 INTRODUCTION TO DATA VISUALIZATION	1
BLOCK 2 BASIC DATA VISUALIZATION TECHNIQUES	56
BLOCK 3 ADVANCED VISUALIZATION TECHNIQUES	112
BLOCK 4 INTERACTIVE DATA VISUALIZATIONS	166
BLOCK 5 DATA STORYTELLING AND VISUALIZATION DESIGN	226

# **Learning Map**

# **Course Credit-4**

Content	Course Credit	Page No
BLOCK 1 INTRODUCTION TO DATA VISUALIZATION	0.8	1
Unit 1: Introduction to Data Visualization		2
Unit 2: Types of Data and their Representation		17
Unit 3: Principles of Effective Data Visualization		32
BLOCK 2 BASIC DATA VISUALIZATION TECHNIQUES	0.8	56
Unit 4: Bar Charts and Histograms		57
Unit 5: Line and Area Charts		77
Unit 6: Pie Charts and Donut Charts		95
BLOCK 3 ADVANCED VISUALIZATION TECHNIQUES	0.8	112
Unit 7: Scatter Plots and Bubble Charts		113
Unit 8: Heat maps and Tree Maps		129
Unit 9: Box Plots and Violin Plots		148
BLOCK 4 INTERACTIVE DATA VISUALIZATIONS	0.8	166
Unit 10: Transactions and ACID Properties		167
Unit 11: Concurrency Control and Recovery Mechanisms		193
Unit 12: Indexing and Hashing Techniques		210
BLOCK 5 DATA STORYTELLING AND VISUALIZATION DESIGN	0.8	226
Unit 13: Data Storytelling Techniques		227
Unit 14: Visual Perception and Color Theory in Data Visualization		250
Unit 15: Best Practices for Designing Data Visualizations		270

## **Prior Learning**

This course builds upon prior knowledge of data analysis and statistics, helping students leverage visualization techniques to turn data into actionable insights and improve decision-making processes.