

DEPARTMENT OF PSYCHOLOGY

M.A. Psychology

Structure-I (2- Year PG Program)

DISCIPLINE SPECIFIC CORE COURSE

SEMESTER I

**DSC 102: EXPERIMENTAL DESIGN AND QUANTITATIVE TECHNIQUES
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE**

Course Title & Code	Total Credits	Credit distribution of the course			Eligibility Criteria/ Prerequisite
		Lecture	Tutorial	Practical	
DSC 102 Experimental Design and Quantitative Techniques	4	3	0	1	Graduation in any stream

Marks:100

Hours: 60

Credit: 4 (Lectures + Internal Assessment + Practical)

Course Objectives:

1. To create an in-depth understanding of designs and techniques in psychological research.
2. To learn to analyse quantitative psychological data using parametric as well as non-parametric tests
3. To understand and to be able to analyse data using multivariate analysis.
4. To learn the usefulness and application of different statistical methods.

Course Learning Outcomes:

1. Students will be introduced to the key concepts and techniques of experimental designs in research.
2. Students will develop an understanding and will be able to analyse quantitative data using various parametric tests.
3. Students will develop an understanding and will be able to analyse quantitative data using nonparametric tests.
4. Students will be able to apply quantitative data to diverse theoretical perspectives and research findings
5. Students will learn to analyse data using statistical softwares.
6. Students will learn to emphasize the application of quantitative data to the understanding of psychological phenomena.

Course Contents:

Unit 1: Experimental Designs: Between group and within group designs; Before-after design; Repeated measure designs; Completely Randomized Group Design; Randomized Block Design; Factorial Designs; ANOVA Latin Square Design; Greco Latin Square Design; Time Series Design **(12 Hours)**

Unit 2: Parametric Statistics- Descriptive vs Inferential Statistics; Statistical analysis and types of data; Estimation of sample size (G Power test); Graphical representation of data; Hypothesis Testing; Partial Correlation; Multiple Correlation; Regression **(8 Hours)**

Unit 3: Non-Parametric Statistics- Sign -Rank Test; Mann Whitney U Test; Friedman ANOVA; Kruskal Wallis Test; Kendal's Correlation; Biserial and Point Biserial Correlation; Tetrachoric Correlation; Phi Coefficient. **(10 Hours)**

Unit 4: Multivariate Statistics Factor Analysis (Exploratory and Confirmatory); Cluster Analysis; MANOVA; ANCOVA **(10 Hours)**

Practicum: At least 2 (Two) based on the above-mentioned units **(20 Hours)**

Essential Readings:

1. Broota, K.D. (2020). *Experimental Design in Behavioural Research*. ND: New Age International Pub. New Delhi
2. Cochran, W.G., & Cox, G.M. (1992). *Experimental Designs* (2nd Ed.). Wiley. ISBN: 978-0-471-54567-5
3. Hair, J.F., Black, W.C., Babin, B.J. & Anderson, R.E. (2010). *Multivariate Data Analysis* (7th Ed.) Pearson, New York
4. Kirk, R. (2020). *Experimental Design: Procedures for the Behavioural Sciences* (4th Ed.). Sage Ltd.
5. Mohanty, B & Misra, S. (2015). *Statistics for Behavioural and Social Sciences*. Sage Publication: New Delhi
6. Siegel, S. & Castellen, J. (1988). *Non- parametric statistics for the Behavioral Sciences* (2nd Ed.). NY: McGraw Hill.
7. Vehkalahti, K. & Everitt, B. S. (2019). *Multivariate Analysis for the Behavioral Sciences* (2nd Ed.). Routledge, Taylor & Francis, CRC Press

Additional Readings:

1. Ferguson, G. A. (1959). *Statistical analysis in psychology and education*.
2. Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings*. Oxford University Press.
3. Keller, G. (2014). *Statistics for management and economics*. Nelson Education.
4. Sani, F. & Todman, J. B. (2006). *Experimental Design And Statistics for Psychology: A First Course Paperback*. Blackwell Publishing
5. Seltman, H. J. (2014). *Experimental design and analysis*. Retrieved January, 15, 2015.
6. Siegel, S. (1986). *Non-parametric statistics*. NY: McGraw Hill.
7. Winer, B. J. (1971). *Statistical principles in experimental design*. NY: McGraw Hil