Non-Parametric Statistical Methods Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Non-parametric statistical methods are increasingly vital in today's data-driven decision-making landscape. Unlike traditional parametric techniques, non-parametric approaches do not assume an underlying probability distribution, making them ideal for real-world datasets that are often skewed, small, or contain outliers. Non-Parametric Statistical Methods Training Course provides participants with hands-on expertise in advanced non-parametric techniques, enabling accurate analysis, hypothesis testing, and predictive insights. Participants will gain practical experience using cutting-edge statistical software tools, applying robust techniques to diverse sectors including healthcare, finance, social sciences, and technology.

Designed for professionals, researchers, and analysts, this course emphasizes the strategic application of non-parametric statistics to solve complex problems. By leveraging real-world case studies, interactive exercises, and expert-led demonstrations, learners will develop the capability to interpret data with precision, enhance analytical decision-making, and improve research outcomes. Whether you are handling survey data, experimental results, or financial datasets, mastering non-parametric methods will empower you to extract meaningful insights with confidence.

Programme Curriculum

Non-Parametric Statistical Methods Training Course

Introduction

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Course Objectives

By the end of this training, participants will be able to:

1. Understand the foundations of non-parametric statistical methods.
2. Apply rank-based tests for independent and dependent samples.
3. Conduct Chi-square tests for categorical data analysis.
4. Perform Mann-Whitney U and Wilcoxon signed-rank tests.
5. Analyze multiple groups using the Kruskal-Wallis test and Friedman test.
6. Interpret Spearman’s rank correlation for non-linear associations.
7. Utilize Kolmogorov-Smirnov and Shapiro-Wilk tests for distribution-free analysis.
8. Integrate bootstrap methods and resampling techniques for robust inference.
9. Explore trend analysis and time series using non-parametric approaches.
10. Apply non-parametric regression and smoothing techniques.
11. Evaluate real-world case studies across healthcare, finance, and social sciences.
12. Leverage statistical software tools like R, Python, and SPSS for non-parametric analysis.
13. Develop actionable data-driven insights and make evidence-based decisions.

Target Audience

1. Data Analysts & Business Analysts
2. Research Scientists & Statisticians
3. Academicians & University Students in Statistics
4. Market Research Professionals
5. Healthcare Data Analysts
6. Financial Analysts & Risk Managers
7. Data Scientists & Machine Learning Practitioners
8. Policy Makers & Social Science Researchers

Course Modules

Module 1: Introduction to Non-Parametric Statistics

- Understanding non-parametric vs parametric methods
- Applications in real-world datasets
- Advantages and limitations
- Role in modern analytics

- Case Study: Survey response analysis

Module 2: Data Types & Distribution-Free Concepts

- Types of data
- Identifying when non-parametric methods are suitable
- Data preprocessing techniques
- Handling missing data
- Case Study: Customer satisfaction survey

Module 3: Chi-Square Test for Independence & Goodness of Fit

- Formulating hypotheses
- Contingency table analysis
- Computing expected frequencies
- Interpreting Chi-square results
- Case Study: Market segmentation study

Module 4: Mann-Whitney U Test

- Comparing two independent samples
- Step-by-step calculations
- Understanding U statistic
- Reporting results in research papers
- Case Study: Clinical trial outcomes

Module 5: Wilcoxon Signed-Rank Test

- Paired sample analysis
- Ranking differences
- Hypothesis testing interpretation
- Visualizing paired data
- Case Study: Pre- and post-intervention study

Module 6: Kruskal-Wallis H Test

- Multiple group comparisons
- Post-hoc analysis techniques
- H statistic calculation
- Assumptions & limitations
- Case Study: Product rating analysis

Module 7: Friedman Test

- Repeated measures non-parametric test
- Ranking and interpreting results
- Comparing multiple treatments over time
- Visual tools for non-parametric repeated measures
- Case Study: Employee satisfaction across departments

Module 8: Spearman’s Rank Correlation

- Measuring monotonic relationships

- Calculating correlation coefficients
- Interpretation & significance
- Comparing with Pearson correlation
- Case Study: Social media engagement vs sales

Module 9: Kendall’s Tau

- Alternative rank correlation
- Computation & interpretation
- Applications in ordinal datasets
- Handling tied ranks
- Case Study: Customer loyalty vs service quality

Module 10: Kolmogorov-Smirnov Test

- Comparing distributions
- Hypothesis testing for equality
- Test statistic and p-value interpretation
- One-sample and two-sample KS tests
- Case Study: Income distribution analysis

Module 11: Shapiro-Wilk Test

- Testing normality assumptions
- Understanding test outputs
- Visual diagnostic plots
- Integration with statistical software
- Case Study: Biological measurements analysis

Module 12: Bootstrap & Resampling Techniques

- Resampling fundamentals
- Confidence interval estimation
- Bias and variance assessment
- Applications in predictive modeling
- Case Study: Marketing campaign ROI

Module 13: Non-Parametric Regression

- Smoothing techniques
- Kernel regression basics
- Local polynomial regression
- Model selection and validation
- Case Study: Housing price prediction

Module 14: Trend Analysis with Non-Parametric Methods

- Seasonal and cyclic trends
- Mann-Kendall trend test
- Sen’s slope estimation
- Visualization of non-linear trends
- Case Study: Climate data trend detection

Module 15: Practical Applications & Case Studies

- Real-world datasets across sectors
- Hands-on exercises in R and Python
- Collaborative data analysis
- Presentation of insights
- Case Study: Comparative analysis of healthcare interventions

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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