SAS Programming for Advanced Statistical Procedures 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

In today’s data-driven research environment, the ability to manage, analyze, and report on sensitive topics such as mental health, gender identity, substance abuse, and social inequalities requires not only technical expertise but also ethical sensitivity and methodological rigor. SAS Programming for Advanced Statistical Procedures Training Course equips researchers, data scientists, and analysts with in-demand SAS programming skills, allowing them to design and implement statistically valid procedures for sensitive research domains.

Participants will gain hands-on experience in using SAS for complex data structures, applying advanced statistical models, and implementing data privacy techniques. With real-world case studies and a problem-solving approach, this course ensures learners are well-prepared to tackle high-impact research challenges using cutting-edge analytical tools while maintaining ethical research standards.

Programme Curriculum

SAS Programming for Advanced Statistical Procedures Training Course

Introduction

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ensures learners are well-prepared to tackle high-impact research challenges using cutting-edge analytical tools while maintaining ethical research standards.

Course Objectives

1. Understand ethical considerations in researching sensitive data.
2. Apply advanced SAS programming for data manipulation and modeling.
3. Perform multivariate analysis on sensitive datasets.
4. Use data anonymization and masking techniques.
5. Implement logistic and ordinal regression models in SAS.
6. Conduct survival analysis on longitudinal sensitive data.
7. Integrate machine learning procedures in SAS for predictive modeling.
8. Handle missing data using multiple imputation techniques.
9. Develop macro programs to automate complex analyses.
10. Visualize confidential insights using secure SAS reporting tools.
11. Conduct sensitivity analysis and validate models effectively.
12. Work with multi-source sensitive datasets using data merging strategies.
13. Document and interpret outputs with reproducible research techniques.

Target Audiences

1. Academic Researchers
2. Government Data Analysts
3. Health and Social Science Professionals
4. NGO Research Officers
5. Clinical Trials Statisticians
6. Graduate Students in Data Science
7. SAS Programmers
8. Public Policy Analysts

Course Duration: 10 days

Course Modules

Module 1: Introduction to Sensitive Topics in Research

- Overview of sensitive research domains
- Ethical concerns in human-subject research
- IRB compliance and approval workflows
- Cultural competency in survey/questionnaire design
- Risk assessment and mitigation
- **Case Study: Researching adolescent mental health data**

Module 2: SAS Fundamentals for Sensitive Data

- Data step vs proc step: Practical insights
- Importing/exporting secure data
- SAS libraries and metadata management
- SAS log interpretation and error handling
- Formats/informats for privacy-compliant datasets
- **Case Study: Gender-based violence survey data**

Module 3: Advanced Data Cleaning and Management

- Detecting and managing outliers

- Standardizing data from multiple sources
- Creating derived variables securely
- Restructuring longitudinal data
- Ensuring traceability in transformation steps
- **Case Study: Cleaning datasets from anonymous online forums**

Module 4: Data Anonymization and Privacy Techniques

- De-identification vs pseudonymization
- Hashing and scrambling identifiers in SAS
- Data masking functions and macros
- Secure merging and linking of datasets
- Legal and ethical obligations in data protection
- **Case Study: Handling patient data in a trauma registry**

Module 5: Descriptive Statistics with Ethical Emphasis

- Summary statistics for sensitive variables
- Frequency analysis for categorical data
- Cross-tabulations in secure environments
- Avoiding re-identification in small cell sizes
- Reporting techniques for sensitive indicators
- **Case Study: Reporting suicidal ideation in teen populations**

Module 6: Regression Models for Categorical Data

- Binary logistic regression
- Multinomial and ordinal logistic regression
- Model diagnostics and fit measures
- Interpreting coefficients in sensitive contexts
- Dealing with quasi-complete separation
- **Case Study: Analyzing intimate partner violence survey data**

Module 7: Survival Analysis in Sensitive Research

- Kaplan-Meier curves in censored data
- Cox proportional hazards modeling
- Time-varying covariates and risk factors
- Stratified analysis for demographic groups
- Visualizing survival trends ethically
- **Case Study: Tracking recovery time for PTSD patients**

Module 8: Handling Missing Data Ethically

- Mechanisms: MCAR, MAR, MNAR
- Patterns of missingness in sensitive variables
- Multiple imputation using PROC MI
- Imputation diagnostics and sensitivity analysis
- Reporting post-imputation results
- **Case Study: Missing responses in drug abuse research**

Module 9: Multivariate Analysis Using SAS

- Factor analysis for psychosocial metrics
- Principal component analysis (PCA)
- Cluster analysis with ethical safeguards

- Canonical correlation in social science datasets
- Interpretation of high-dimensional output
- **Case Study: Mental health burden index among refugees**

Module 10: Macro Programming in SAS

- Writing reusable macro programs
- Parameterization for flexibility
- Conditional logic in macros
- Automating analysis workflows
- Debugging and validation
- **Case Study: Automating analysis of sensitive income data**

Module 11: Machine Learning Techniques in SAS

- Decision trees and random forests
- Neural networks for classification
- Model training/testing with sensitive inputs
- Overfitting and ethical overreach
- SAS Viya integration for ML
- **Case Study: Predicting domestic violence risk**

Module 12: Visual Analytics and Secure Reporting

- Creating secure dashboards in SAS
- Data redaction for visualization
- Annotated graphs with ethical framing
- Interactive reports for non-technical users
- Infographics and stakeholder reporting
- **Case Study: Visualizing elder abuse trends**

Module 13: Data Integration and Linking Strategies

- Merging datasets with sensitive keys
- Master/slave data structures
- Fuzzy matching for anonymized records
- Quality checks in merge processes
- Avoiding linkage bias
- **Case Study: Linking hospital and police records**

Module 14: Sensitivity Analysis and Model Validation

- Bootstrap and jackknife techniques
- Assessing robustness of findings
- Stress-testing assumptions
- Cross-validation in high-risk datasets
- Documentation of sensitivity procedures
- **Case Study: Substance use predictors in minority groups**

Module 15: Reproducible Research and Documentation

- Version control using Git with SAS
- Writing SAS logs for auditing
- Output Delivery System (ODS) best practices
- Annotated code documentation
- Ethical archiving and publication readiness

- **Case Study: Publishing sensitive results in peer-reviewed journals**

Training Methodology

- Instructor-led hands-on labs using real anonymized datasets
- Case-based learning to simulate sensitive real-world scenarios
- Use of guided SAS coding exercises with peer review
- Ethical debates and breakout discussions
- Take-home projects with feedback on statistical and ethical integrity
- Access to recorded lectures and secured sample codes

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

Start Date	End Date	Location	Price
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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