Mastering Data Analysis with SPSS: From Basic to Advanced

Course Outline

Certificate of Completion:
Only Basic part: "*Basic Data Analysis with SPSS*"
Basic & Advanced part: "*Mastering Data Analysis with SPSS: From Basic to Advanced*"

Content		
Basic Part		
Day 1	**Chapter 1**	**Introduction** • Basic introduction and definitions • Download and install SPSS • SPSS related terms • Rules of variable names • Data type • Data file creation
Day 2	**Chapter 2**	**Data Transformation and Manipulation** • Import files from several file formats • Split file • Missing value analysis • Data re-computing and re-coding • Data manipulation

Day 3	**Chapter 3**	**Descriptive Statistics and Visualization**
		• Introduce to our data
		• Frequency analysis
		  • Central tendency: mean, median, mode.
		  • Variability analysis or Dispersion: range, variance, standard deviation, minimum, maximum.
		• Chart Builder and Legacy Dialogs
		• Steam-and-leaf plot
		• Explore
		• Normality test & Outlier detection
		• Create t-score and z-score
		• Percentile Score

Day 4	**Chapter 4**	**Correlation & Regression** • Definition of correlation • Pearson, Spearman, Kendall's tau • Definitions of regression • Types of regression • Simple linear regression • Linear bi-variate regression • Multiple linear regression • Regression with dummy predictors • Non-linear regression • Logistic regression

Day 5	**Chapter 5**	**Statistical Inference & Tests** • Some definitions of related terms. • Distinguish between parametric and non-parametric tests. • Crosstabs analysis **Parametric Test** • Measuring strength • One-sample t-test and z-test • Independent sample t-test • Paired samples t-test • ANOVA **Non-Parametric Test** • Chi-square • Mann-Whitney U Test, K-S test • Kruskal-Wallis Test
Advanced Part		
Day 6	**Chapter 6**	**Advanced Correlation & Regression** • Partial correlation • Semi-partial correlation • Confidence interval for correlation • Average correlation • Multinomial logistic regression • Testing heteroscedasticity • Heteroscedasticity adjusted standard errors • Robust regression
Day 7	**Chapter 7**	**Advanced Statistical Tests** • Cronbach's alpha • Levene's test, Welch's test • Post Hoc tests **Parametric Test** • ANOVA (one-way, two-way, repeated measure) • ANCOVA • MANOVA **Non-Parametric Test** • Wilcoxon Rank Sum Test • Friedman Test • Jonckheere Trend Test • McNemar, Cochran's Q
Day 8	**Chapter 8**	**Dimension Reduction** • Principal component analysis (PCA) • Factor Analysis • Parallel analysis
Day 9	**Chapter 9**	**Classify and Clustering** • Two-step cluster • K-means cluster • Hierarchical cluster • Decision Tree

Day 10	Chapter 10	**Survival Analysis** • Life table • Kaplan-Meier • Cox regression
Day 11	Chapter 11	**Neural network analysis** • Introduction & Types of Neural Networks • Architecture of Neural Networks • Activation Functions • Training Neural Networks • Evaluating Neural Networks • Neural Network Implementation (Hands-on) • Advanced Concepts
Day 12	Chapter 12	**Time Series Analysis and Forecasting** • Related terms and definitions • Decision building and analysis
Day 13	**Project 1 discussion and evaluation**	
Day 14	**Project 2 discussion and evaluation**	
Day 15	**Project 3 discussion and evaluation**	