SigmaXL® Version 5.1 Feature List Summary

Compatible with Excel 2007**

Menu Layout: Classical or DMAIC**

Recall Last Dialog

EZ-Pivot Utility:
- Easily create Pivot Tables in Excel

Data Manipulation:
- Subset by Category, Number, Date or Random
- Stack Subgroups Across Rows*
- Stack and Unstack Columns, Standardize Data*
- Normal Random Number Generator
- Box-Cox Transformation

Calculators & Templates:
- Team/Project Charter, SIPOC Diagram**
- Data Measurement Plan**
- Cause & Effect (XY) Matrix
- Failure Mode & Effects Analysis (FMEA)
- Quality Function Deployment (QFD)**
- Pugh Concept Selection Matrix**, Control Plan**
- Sample Size – Discrete and Continuous
- Gage R&R Study – with Multi-Vari Analysis
- Attribute Gage R&R (Attribute Agreement Analysis)
- Process Sigma Level – Discrete and Continuous
- Process Capability & Confidence Intervals
- Standard Deviation Confidence Interval
- 1 Proportion Confidence Interval (Normal and Exact), 2 Proportions Test

Graphical Tools:
- Basic and Advanced (Multiple) Pareto Charts
- Run Charts (with Nonparametric Runs Test allowing you to test for Clustering, Mixtures, Lack of Randomness, Trends and Oscillation)
- Basic Histogram
- Multiple Histograms and Descriptive Statistics (includes Confidence Interval for Mean and StDev., and Anderson-Darling Normality Test)
- Multiple Histograms and Process Capability (Pp, Ppk, Cpm, ppm, %)
- Multiple Boxplots, Dotplots*
- Multiple Normal Probability Plots (with 95% confidence intervals to ease interpretation of normality/non-normality)
- Multi-Vari Charts
- Scatter Plots (with linear regression and optional 95% confidence intervals and prediction intervals)
- Scatter Plot Matrix

Measurement Systems Analysis:
- Basic MSA Templates
- Create Gage R&R (Crossed) Worksheet*
  - Generate worksheet with user specified number of parts, operators, replicates
- Analyze Gage R&R (Crossed)*
  - ANOVA, %Total, %Tolerance (2-Sided or 1-Sided), %Process, Variance Components, Number of Distinct Categories
  - Gage R&R Multi-Vari and X-bar R Charts
  - Confidence Intervals for %Total, %Tolerance, %Process and Standard Deviations
  - Handles unbalanced data
- Attribute MSA (Binary) *
  - Any number of samples, appraisers and replicates
  - Within Appraiser Agreement, Each Appraiser vs Standard Agreement, Each Appraiser vs Standard Disagreement, Between Appraiser Agreement, All Appraisers vs Standard Agreement; Fleiss' kappa

Statistical Tools:
- P-values turn red when results are significant (p-value < alpha)
- Descriptive Statistics including Anderson-Darling Normality test, Skewness and Kurtosis with p-values**
- 1 Sample t-test and confidence intervals
- Paired t-test, 2 Sample t-test
- 2 Sample comparison tests:
  - Reports AD Normality, F-test and Levene's for variance, t-test assuming equal and unequal variance, Mann-Whitney test for medians.
  - Recommended tests are highlighted based on sample size, normality, and variance
- One-Way ANOVA and Means Matrix
- Equal Variance Tests (Bartlett, Levene and Welch's ANOVA)
- Correlation Matrix (Pearson and Spearman's Rank Correlation)
- Multiple Linear Regression:
  - Accepts continuous and/or categorical (discrete) predictors*
  - Interactive Predicted Response Calculator with 95% Confidence Interval and 95% Prediction Interval*
  - Residual Plots: histogram, normal probability plot, residuals vs. time, residuals vs. predicted and residuals vs. X factors
  - Residual types include Regular, Standardized, Studentized (Deleted t) and Cook's Distance (Influence), Leverage and DFITS
  - Highlight of significant outliers in residuals*
  - Durbin-Watson Test for Autocorrelation in Residuals with p-value*
  - ANOVA report for categorical predictors*
  - Pure Error and Lack-of-Fit report*
  - Collinearity Variance Inflation Factor (VIF) and Tolerance report*
  - Fit Intercept is optional**
- Binary and Ordinal Logistic Regression
  - Powerful and user-friendly logistic regression.
  - Report includes a calculator to predict the response event probability for a given set of input X values.
  - Categorical (discrete) predictors can be included in the model in addition to continuous predictors.
  - Model summary and goodness of fit tests include Likelihood Ratio Chi-Square, Pseudo R-Square, Pearson Residuals Chi-Square, Deviance Residuals Chi-Square, Observed and Predicted Outcomes – Percent Correctly Predicted.
  - Stored data includes Event Probabilities, Predicted Outcome, Observed-Predicted, Pearson Residuals, Standardized Pearson Residuals, and Deviance Residuals.
- Chi-Square Test (Stacked Column data and Two-Way Table data)
- Nonparametric Tests:
  - 1 Sample Sign and 1 Sample Wilcoxon
  - 2 Sample Mann-Whitney
  - Kruskal-Wallis and Mood's Median Test
  - Kruskal-Wallis and Mood's include a graph of Group Medians and 95% Median Confidence Intervals
  - Runs Test
- Power and Sample Size Calculators for:
  - 1 and 2 Sample t-Test
  - One-Way ANOVA
  - 1 Proportion Test, 2 Proportions Test
  - The Power and Sample Size Calculators allow you to solve for Power (1 – Beta), Sample Size, or Difference (specify two, solve for the third).
- Power and Sample Size Chart. Quickly create a graph showing the relationship between Power, Sample Size and Difference.

Design of Experiments:
- Generate 2-Level Factorial and Plackett-Burman Screening Designs*
  - User-friendly dialog box
  - 2 to 19 Factors
  - 4,8,12,16,20 Runs
  - Unique "view power analysis as you design"
  - Randomization, Replication, Blocking and Center Points
- Basic DOE Templates
  - 2 to 5 Factors, 2-Level Full and Fractional-Factorial designs
  - Automatic update to Pareto of Coefficients
  - Easy to use, ideal for training
- Main Effects & Interaction Plots
- Analyze 2-Level Factorial and Plackett-Burman Screening Designs*
  - Used in conjunction with Recall Last Dialog, it is very easy to iteratively remove terms from the model
  - Interactive Predicted Response Calculator with 95% Confidence Interval and 95% Prediction Interval.
  - ANOVA report for Blocks, Pure Error, Lack-of-Fit and Curvature
  - Collinearity Variance Inflation Factor (VIF) and Tolerance report
  - Residual plots: histogram, normal probability plot, residuals vs. time, residuals vs. predicted and residuals vs. X factors
  - Highlight of significant outliers in residuals
  - Durbin-Watson Test for Autocorrelation

Process Capability:
- Process Capability/Sigma Level Templates
- Multiple Histograms and Process Capability
- Capability Combination Report for Individuals/Subgroups:*
  - Histogram
  - Capability Report (Cp, Cpk, Pp, Ppk, Cpm, ppm, %)
  - Normal Probability Plot
  - Normality Test
  - Control Charts
- Box-Cox Transformation

Control Charts:
- Control Chart Selection Tool**
- Individuals, Individuals and Moving Range
- X-Bar & R, X-Bar & S
- I-MR-R, I-MR-S (Between/Within)
- P, NP, C, U
- P' and U' (Laney) to handle overdispersion**
- Control charts include a report on tests for special causes. Special causes are also labeled on the control chart data point. Set defaults to apply any or all of Tests 1-8.
- Process Capability report (Pp, Ppk, Cp, Cpk) is available for I, I-MR, X-Bar & R, X-bar & S charts.
- Add data to existing charts – ideal for operator ease of use!
- Scroll through charts with user defined window size*
- Advanced Control Limit options: Subgroup Start and End; Historical Groups (e.g. split control limits to demonstrate before and after improvement)
- Box-Cox Transformation

Reliability/Weibull Analysis:
- Weibull Analysis*
  - Complete and Right Censored data
  - Least Squares and Maximum Likelihood
  - Output includes percentiles with confidence intervals, survival probabilities, and Weibull probability plot.

** new features in SigmaXL Version 5.1   * new features in SigmaXL Version 5.0