

Data Analytics: Regression, ANOVA & Solver in Excel

Learn to analyse data in Excel using descriptive statistics, regression, ANOVA and Solver to build and evaluate predictive models.

5 Days

DURATION

5

MODULES

38

TOPICS

3

HANDS-ON ACTIVITIES

COURSE OVERVIEW

This course covers importing and preparing data in Excel, including descriptive statistics, frequency analysis, Pivot Tables and handling of noisy or incomplete data. It then addresses mode shape and scenario analysis, covering time series plotting, curve fitting, moving averages, deterministic systems and what-if analysis using dynamic spreadsheets. It continues with regression analysis and predictive modelling, covering curve fits, goodness of fit measures, Solver, correlation versus causality, and building regression models in Excel and XLminer. It closes with logistic regression classification and model evaluation metrics, followed by non-deterministic data-driven methods, single and two-factor ANOVA, and optimisation of regression coefficients with Solver.

WHO THIS COURSE IS FOR

Data Analysts

Business Analysts

Financial Analysts

Excel Power Users

Predictive Modellers

LEARNING OBJECTIVES

- Import and prepare data for analysis in Excel
- Apply descriptive statistics, frequency analysis and Pivot Tables
- Identify and handle noisy, incomplete or outlier data
- Perform time series, mode shape and scenario analysis
- Build and evaluate regression models using Excel and XLminer
- Distinguish correlation from causality when interpreting curve fits
- Build and interpret logistic regression classification models
- Apply single and two-factor ANOVA and optimise coefficients with Solver

5 Modules, 38 Topics

01

Logical & Reliable Data Analysis

TOPICS

- Importing data into Excel
- Best practices in data analysis
- Descriptive statistics and their real meanings
- Performing frequency analysis
- Using Pivot Tables & Charts
- Handling noisy/incomplete data & dealing with outliers

02

Data Mode Shape Analysis & Scenario Analysis

TOPICS

- Plotting data against time
- Generating data mode shapes
- Fitting curves to data
- Correlating mode shape to time-based events
- Interpreting time series analyses
- Moving average calculations
- Representing analytical problems as multi-input, single-output (MISO) systems
- Deterministic systems analysis
- “What-if” & visual scenario analysis
- Dynamic & interactive spreadsheets
- Measuring the sensitivity of calculated variables

03

Hands-on Exercise

Regression Analysis & Predictive Modelling

TOPICS

- Equations of curves
- Predicting future behavior using regression analysis
- Linear, polynomial, exponential, and power curve fits
- The dangers of overfitting
- **Goodness of fit:** SSE, R^2 , Adjusted R^2
- Evaluating equations, solving equations, and using Solver
- Correlation vs. causality

PREDICTIVE MODELING USING REGRESSION (EXCEL & XLMINER)

- Understanding Predictive Modeling
- Building a Regression Model in XLminer
- Model Performance Evaluation (R^2 , Adjusted R^2 , MSE, RMSE, MAE)

04

Hands-on Exercise

Classification Using Logistic Regression & Evaluation Metrics

TOPICS

- Understanding Classification in Machine Learning
- Building a Logistic Regression Model in Excel & XLminer
- Interpreting Logistic Regression Coefficients

MODEL PERFORMANCE EVALUATION

- Confusion Matrix Calculation (TP, FP, FN, TN)
- Precision, Recall, F1-Score Computation in Excel
- ROC Curve & AUC (Manual Plot in Excel)

05

AI Demonstration

Data-Driven Methods, ANOVA & Optimization Techniques

TOPICS

- Non-deterministic system analysis
- Data-driven methods for prediction
- One-step ahead future prediction using multivariate correlation
- Single & two-factor ANOVA
- **Optimization with Solver:** Finding optimal regression coefficients

NOTES

Notes:

- This course is designed for Excel-based Machine Learning training using XLminer and built-in tools.
- Includes hands-on exercises, practical case studies, and real-world applications.

Practise What You Learn

#	MODULE	ACTIVITY
03	Regression Analysis & Predictive Modelling	Hands-on Exercise: Predicting Sales Revenue using Ad Spend & Market Trends
04	Classification Using Logistic Regression & Evaluation Metrics	Hands-on Exercise: Predicting Employee Attrition (Will an employee leave or stay?)
05	Data-Driven Methods, ANOVA & Optimization Techniques	AI Demonstration: The Travelling Salesman Problem

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Hands-on exercises throughout the course
- Delivery by certified instructors and subject matter experts
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

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Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

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