



LABORATORY TRAINING

Quantitative Analysis and Statistical Methods

2 day course

Classroom, online or in-house

Course overview

This course gives delegates a detailed and current grounding in quantitative analysis, from the underlying mathematical and statistical concepts through to the modelling techniques used to draw defensible conclusions from data. It covers the difference between qualitative and quantitative analysis, types of data and measures of central tendency, data collection and sampling methods, graphical representation, probability concepts and distributions, and hypothesis testing including population parameters and margin of error. Delegates work through paired and unpaired t tests, one way and two way ANOVA, simple and multiple linear regression with their assumptions and diagnostics, correlation, time series and non linear models. The programme closes on supervised and unsupervised learning, factor and cluster analysis, and how these methods are applied in financial analysis, marketing analytics and operational research. Delivery is roughly 30 percent lectures, 20 percent workshops and delegate presentations, 30 percent hands on exercises and case studies, and 20 percent software and video.

What you will learn

- Differentiate qualitative from quantitative analysis and apply the underlying mathematical and statistical concepts
- Carry out data collection and sampling, and represent results graphically
- Explain basic probability concepts and probability distributions
- Apply null and alternative hypothesis testing and estimate population parameters and margin of error
- Select and interpret paired and unpaired t tests, including their assumptions
- Apply one way and two way ANOVA and interpret the F statistic and p values
- Build simple and multiple linear regression models, run diagnostic tests and handle multicollinearity
- Apply correlation analysis, time series analysis and non linear regression models
- Differentiate supervised from unsupervised learning and identify common algorithms and quantitative software
- Apply factor and cluster analysis in financial analysis, marketing analytics and operational research

Who should attend

- Analytical chemists, laboratory technicians and laboratory scientists
- Pharmaceutical scientists, biotechnologists and forensic scientists
- Pathologists, clinical laboratory scientists and medical researchers
- Researchers, data scientists and data analysts
- Business, finance and policy analysts
- Marketing and market research professionals

Course outline

- 01 Qualitative versus quantitative analysis and the underlying mathematical and statistical concepts
- 02 Types of data, measures of central tendency and graphical representation
- 03 Data collection techniques and sampling methods
- 04 Basic probability concepts and probability distributions
- 05 Null and alternative hypothesis testing, population parameters and margin of error
- 06 Paired and unpaired t tests, their assumptions and interpretation
- 07 One way and two way ANOVA, the F statistic and p values
- 08 Simple linear regression: the regression equation, coefficients, assumptions and diagnostic tests
- 09 Multiple linear regression: adjusted R squared, model fit and handling multicollinearity
- 10 Correlation analysis, time series analysis and non linear regression models
- 11 Supervised and unsupervised learning, common algorithms and quantitative software



12 Factor analysis, cluster analysis, financial quantitative analysis, marketing analytics and operational research

Upcoming dates

Dates	Venue	Format	Fee per delegate
6 to 7 November 2026	Gaborone, Botswana	Classroom	R11,995
6 to 7 February 2027	Dar es Salaam, Tanzania	Classroom	R11,995
18 to 19 March 2027	Durban, South Africa	Classroom	R11,995
19 to 20 April 2027	Dubai, UAE	Classroom	R11,995

Fees and how to register

Online **from R6,500** per delegate, classroom **from R11,995** per delegate, in-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afiscience.co.za, or WhatsApp us on **+27 63 479 1136**.

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