Tel No:+97126654546 | Fax No:+97126654182 | Email: aisha@cmc-me.com | www.cmc-me.com

AL104:
Introduction to Statistical Analysis of Laboratory Data

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Training Description:

This essential training will detail the fundamentals statistical concepts that are essential for professionals in the field. Topics emphasizes the principles of descriptive and inferential statistical applications and focuses on actual study examples, problem solving and interpretation of results. This course is designed as an introduction to the statistical principles of laboratory data analysis and quality control that form the basis for the design and analysis of laboratory investigations.

This training will concentrate on the philosophy and understanding of the statistical principles required in conducting sound scientific investigations of laboratory processes and validation, including design and sample size issues. It will not simply present statistical formulae and the lectures are oriented toward professionals having minimal formal training in statistics or mathematics beyond basic algebra. However, for those with more formal training in statistics wishing to actually apply the techniques, appropriate time and references will be given for the procedures involved.

Training Objective:

By the end of the training, participants will be able to:

- ✓ Understand the concepts of statistical design, analysis and graphing methods required in laboratory data analysis and reporting
- ✓ Interpret and report results related to design and analysis issues as presented in the scientific literature concerning laboratory data analysis, as well as, quality control methods

Training Designed for:

This course is intended for R&D Managers, Analytical Laboratory Supervisors and staff, manufacturing and Production Professionals, Scientists, Technicians and others who wish to comprehend and interpret methods of data analysis relevant to laboratory experimentation. Where applicable, topics are presented with relevant regulatory requirements.

Training Program:

FIVE DAYS:

- ❖ PRE-TEST
- ❖ Introduction
- ❖ Statistical Measures and Descriptive Statistics
  - Central tendency (average or mean, median, mode), dispersion measures such as range, variance, standard deviation, coefficient of variation, unbiased estimates, measurement summary and precision
- ❖ Graphical Techniques
  - Histograms, bar charts, scatter plots – Graphical representation of lab results
- ❖ Distributions and Formal Statistical Laboratory Tests
  - Normal, t-distribution (one sample, two sample, paired), one-way ANOVA to assess effect and necessity of replication, skewed distributions with applications to experimental results with alternative statistical comparison methodologies

- Estimation Statistics
  - Point and interval estimates, accuracy, precision – Further concepts of method validation such as sensitivity, specificity, selectivity, linearity
- Defining Robustness and Ruggedness
  - Design selection criteria, calculations, interpretation, effects of repeated experimentation, multiple lab results
- Defining Linearity Further
  - Applications to method comparison and interpretation – Examination of outliers in exploratory analysis of assay results
- Alternative Strategy to Linearity
  - Alternative advanced method for assessing agreement between two methods of laboratory measurements.
- Limit Strategies
  - Limit of detection, limit of quantitation
- Calibration problem
  - Techniques involving crude and precise methodologies and measurement of bias
- Validation Using Statistical Process Control
  - Use of quality control charts to determine laboratory process stability and capability
- Course Conclusion
- POST-TEST and EVALUATION

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

Please note that the above topics can be amended as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

For training registrations or in-house enquiries, please contact:

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Training & Career Development Department