TRAINING PROGRAM

Modern Analytical Laboratory Management, Operations, Analytical Instrumentation, Equipment, Safety & Quality (ISO 17025)

Description:

Quality management of the laboratory according to international standards is important in order to enhance the laboratory system and environment. Laboratories use ISO 17025 to implement a quality system aimed at improving their ability to consistently produce valid results. A careful analysis of tasks and safety conditions will lead to a redesign of the working environment that will ultimately enhance the overall performance. How to be a quality and internationally accredited laboratory should be the main strategy plan of every laboratory. The aim of the course is to enrich and advance the skills and knowledge of the participants to fully understand the requirements of laboratory accreditation.

Who Should Attend?

The course is designed for people who implement, maintain and review laboratory quality systems. It is suitable for all laboratory staff including managers, quality assurance officers, lab technicians, chemists, chemical engineers and instrument engineers.

Other Information:

- Course document and presentation power point material is about 300 pages.
- USB with the course document, presentation, articles and exercises will be offered to participants.
- Exercises and discussions will be conducted at the end of the course.

Course Objectives:

- To understand the laboratory quality requirements and appreciate the need for a quality system according to the International Standards Organization ISO 17025.
- To understand the significance of calibration methods and traceability.
- Identify the factors which have to be considered when choosing an analysis method.
- To understand how to validate analytical methods.
- To use international the Guide to Lab Quality for accreditation standard methods.
- To recognize the characteristics of a laboratory environment that affect the performance of instruments and hence influence the validity of measurements.
- To use a standard safety work ethic in the laboratory.

Practical Session:

- The course includes a practical segment with case studies and quantitative method exercises, using Minitab 15 and Excel

Course Outline:

- Repeatability and reproducibility
- Optimization design
- Outliers test
- Detection limit
- Confidence limit
- Standard deviation
- Errors in quantitative analysis
- Standard addition-extrapolated method
- Calculation of analytic concentration
- The correlation coefficient
- Instrumental graph-interpolated method
- Calibration using external and internal standards
- Evaluation of peaks area
- Column resolution
- Column efficiency
- Selectivity factor
- Capacity factor
- Making measurements and reporting:
- Introduction to lab quality and accreditation
- Lab Quality Management Requirements ISO 17025 (organization, quality system, document control, review of contracts, subcontracting, purchasing, service to the client, complaints, control of non-conforming work, improvement, corrective actions, preventive actions, control of quality records, internal audits, management review).
- Lab Quality Technical Requirements ISO 17025 (personnel, accommodation, test methods and validation, equipment, measurement traceability, sampling, test items, quality control, reports/calibration certificates)
- Quality in the laboratory:
- Quality of the sample
- Analytic manipulation technique
- Selecting the method
- Chemicals

- Glassware and equipment
- Instrumental technique
- Preparation
- Validation of analytical methods
- Quality management functions
- Laboratory accreditation

More details of the course outline can be provided on request.