



LAB107

Basic Chromatography Techniques, Operation, Applications and Analysis Troubleshooting

Course Introduction:

The purpose of this course is to provide training in the fundamental techniques of both gas chromatography (GC) and liquid chromatography (HPLC). The course covers: major components of a chromatography; operating principles; application; calibration methods; set-up procedures; preventative maintenance; troubleshooting methods; quantitative methods and failure modes for each, along with practical examples. The course also discusses other aspects such as optimization of column lengths, flows, temperatures and pressure with the necessary theoretical information in each part. The aim of this course is to enrich and advance the skills and knowledge of participants and to teach them chromatography technique operation.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ To impart participants with the fundamental techniques and knowledge of chromatography
- ✓ To familiarize participants with the tools and techniques used in chromatography analyses, cause and effect diagrams, calibration and standard analysis methods
- ✓ To provide the skills, knowledge and understanding of principles of chromatography analysis application
- ✓ To use a routine maintenance
- ✓ To impart participants the operation technique
- ✓ To train participants to know how to change and install all chromatography components
- ✓ To be familiar with of the latest analytical methods

Who Should Attend?

This course is intended for all chemists, lab technicians, chemical engineers, instrument engineers and lab supervisors/managers, laboratory QA/QC and all laboratory personnel.

Course Fees:

To be advised as per the course location. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques

- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Outline:

Day 1:

- Fundamental chromatography technique
- Chromatographic theory parameters
- Chromatography retention process
- Separation methods
- Application of chromatography
- Solid phase extraction method

Day 2:

- Derivatization method
- Standard operation method
- Successful and safe operating procedure
- Gas chromatography technique
- Carrier gas and pressure regulator system
- Split/split less inlet system
- Cool on-column inlet and programmed temperature vaporization inlet

Day 3:

- Column configuration
- Detector configuration
- Maintenance and installation procedure for inject system, column and detectors
- Liquid chromatography technique

- Mobile phase solvent
- Pumping system
- Column and detector types

Day 4:

- Operation method of HPLC
- Overview of liquid chromatographic separation methods
- Application of liquid chromatography
- Ion chromatographic method
- Size-exclusion chromatographic method
- Supercritical fluid chromatography

Day 5:

- Instrumentation and operating variables
- Chromatography variables effect
- Techniques to minimize peak broadening
- Column condition and regeneration technique
- Maintenance and installation procedure for inject system, column, pump and detectors
- Troubleshooting and approaches to solve problems
- Quantitative methods: calibration methods, external and internal standards, outliers test, determination of analyze concentration, standard addition method, error in quantitative analysis, confidence limits, detection limit, repeatability, reproducibility and method validation

Course Requirement:

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

Course Timings:

Daily Course Timings:

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