

# The South Asia Centre of Excellence Course Catalogue

Investments in continuous and continual education towards practical knowhow simultaneously with fundamentals improve the productivity by uplifting skills and knowledge collectively. Such education in the field of analytical science is imperative and leads utilizing the full potential of instruments. The South Asia Centre of Excellence (SACOE) has carefully designed its training modules oriented to meet the present and needs in years to come of a basic laboratory to the level high enough to cater a high-end laboratory equipped with state of the art of advanced instruments. The trainings and your specific technical queries are attended by subject matter experts and the Agilent certified trainers. The knowledge acquired therefore, generates more confident soft resources (people) thereby makes an environment to function the hard resources (equipment) in full potential. Your organization feels more confident in its accomplishments and, the knowledge acquired will imperatively serve positioning you and your organization in the technical arena.



## Knowledge Recipients

Broad spectrum of knowledge seekers have been addressed through diverse & carefully attended training modules. Specifically, laboratory managers, chemists, analysts, QA managers, researchers, graduates and undergraduates broadly represent the potential knowledge recipients. More specific trainings relevant to you and your organization would be a choice of yours amongst the training modules in consultation with SACOE.

## Launching of the South Asia Centre of Excellence

Techno Instruments (PVT) LTD recently announced its initiative to strengthen the region's scientific culture. As a result, the concept of South Asia Centre of Excellence was introduced; A new demonstration and workflow laboratory in Sri Lanka in collaboration with the Agilent Technologies (USA). It is a fully equipped state of the art laboratory with modern facilities. SACOE services extend beyond the domestic context to regional levels being worth to mention the first such centre of its kind in the region.



LMD Magazine article on SACOE launch  
LMD, January, 2018 – Sri Lanka Pioneering Business Magazine

## Benefits to you at the South Asia Centre of Excellence

At SACOE, you will be provided a wide range of learning options to meet the needs of your laboratory, by optimizing the productivity on your new or existing equipment while strengthening the practical and the theoretical knowhow on you. Customer education & consulting services helped by partnering and collaborating with you and your team entrust to meet the requirements and desired outcomes you seek.

SAOCE delivers world class updated trainings, methods and application services when and where you need it. The centre further can design courses that are currently not scheduled in your area upon your request as tailor made modules. Register your interest with us and we will place your name in the list of *next to attend*.

## Types of courses we deliver

1. Classroom Trainings
2. Customized Instrument Trainings
3. Customized Courses upon request
4. Special trainings for Graduates & Postgraduate students
5. Sample Preparation Overview and Positioning
6. Good Laboratory Practices
7. Laboratory Accreditation Principles and Practice
8. Analytical Method Validation
9. Uncertainty in Analytical Measurements
10. Laboratory Safety Management and Practices

## Our Strength and Facilities

- Qualified lecturers to conduct training sessions
- Factory trained application specialists
- Factory trained engineers for training assistance
- Fully equipped classrooms with modern media facilities
- Training Materials & Guides

## SACOE Courses In Brief

### **BASIC LIQUID CHROMATOGRAPHY (HPLC) MAINTENANCE & TROUBLESHOOTING**

Reference Code : COE-LC1810A

#### **NATURE**

This course is designed to HPLC operators to provide the basic practical LC maintenance knowledge and systematically isolate and correct common instrument and chromatographic problems of HPLC.

#### **PREREQUISITES**

Basic understanding of the fundamentals of Liquid Chromatography and working knowledge of HPLC are advantageous. But not compulsory as the course has been designed to deliver the knowledge via classroom sessions and work flow experience with the latest system of HPLC.

#### **COURSE CONTENTS**

- Basic LC Mainframe
- Solvent Delivery System Features
- Injectors
- Column and Column Fittings
- Detectors
- Performance Management
- Troubleshooting



## **BASIC GAS CHROMATOGRAPHY (GC) SYSTEM MAINTENANCE & TROUBLESHOOTING**

**Reference Code : COE-GC1811A**

### **NATURE**

This course is meant to familiarize the analysts with operation of the various main modules of GC and the ChemStation Software. Further the course attends to GC operators to provide the basic practical GC maintenance aspects and systematically isolate and correct common instrument and chromatographic problems of GC.

### **PREREQUISITES**

Basic understanding of the fundamentals of Gas Chromatography. Working knowledge of GC is advantageous. But not compulsory as the course has been designed to deliver the knowledge via classroom sessions and work flow experience with the latest system of GC.

### **COURSE CONTENTS**

- Basic GC Mainframe
- Injectors
- Column and Column Fittings
- Detectors
- Performance Management
- Troubleshooting



## **GAS CHROMATOGRAPHY (GC) & LIQUID CHROMATOGRAPHY (LC) CHEMSTATION OPERATION & METHOD VALIDATION**

**Reference Code : COE-XC1812C**

### **NATURE**

The core objectives of this course are to familiarize the analysts, researchers, laboratory QA/QC managers with operation of the various main modules of GC & LC and the ChemStation. Lectures and laboratory exercises are provided to cover analysis and data acquisition as well as system management. Basic concepts of reliable data generation via GC & LC based trace analysis will also be attended. Knowledge on how analytical method validation (AMV) in practice along with GC or LC will connect the GC and LC analyses with the real need in applications.

### **PREREQUISITES**

Basic understanding of the fundamentals of Chromatography and/or a working knowledge of GC & LC. Knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### **COURSE CONTENTS**

- Exposure to the GC & LC ChemStation
- Acquisition to a Method of interest
- Data Analysis – Integration and Quantification
- Importance of AMV
- Principles of AMV
- Aspects of generation of AMV data
- Management of AMV data
- Recognizing of your laboratory

### **AVAILABLE OPTIONS**

**COE-GC1812A – GC ChemStation Operation**

**COE-LC1812A – LC ChemStation Operation**

**COE-GC1812C – GC ChemStation Operation & Method Validation**

**COE-LC1812C – LC ChemStation Operation & Method Validation**

## LIQUID CHROMATOGRAPHY TRIPLE QUADRUPOLE MASS SPECTROMETRY SYSTEM (LC-MSMS) MAINTENANCE & TROUBLE SHOOTING

Reference Code : COE-LC1813A

### NATURE

This course is designed to LC-MSMS operators to provide the basic practical LC-MSMS maintenance knowhow and systematically isolate and correct common instrument and Mass Spectrometry problems of LC-MSMS.

### PREREQUISITES

Basic understanding of the fundamentals of LC-MSMS and/or a working knowledge of LC-MSMS are advantageous. But not compulsory as the course has been designed to deliver the knowledge via classroom sessions and work flow experience with the latest system of LC-MSMS.

### COURSE CONTENTS

- Basic LC-MSMS Mainframe
- Solvent Delivery System Features
- Sample Introduction
- MS Detector Optimization
- System Tuning
- Column and Column Fittings
- Performance Management
- Troubleshooting



## **LIQUID CHROMATOGRAPHY TRIPLE QUADRUPOLE MASS SPECTROMETER (LC-MSMS) MASS HUNTER OPERATION & METHOD VALIDATION**

**Reference Code : COE-LC1814C**

### **NATURE**

This course is oriented to provide the researchers, analysts, Laboratory Quality Controllers with operation of the various main modules of LC-MSMS and the Mass Hunter operations along with pre-decide applications. Knowledge in principles and practice in Analytical Method Validation (AMV) as per international compliance is delivered as one of the key components of this training module with respect to early decided method of application with the consent of the trainees. Classroom sessions and laboratory exercises are the key ways to deliver the knowledge.

### **PREREQUISITES**

Basic understanding of the fundamentals of Chromatography and/or a working knowledge of LC-MSMS. Knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### **COURSE CONTENTS**

- Exposure to the LC-MSMS Mass Hunter operations
- Acquisition to a Method of interest
- Data Analysis 1 – Qualitative
- Data Analysis 2 – Integration and Quantification
- MRM & tMRM
- Importance of AMV
- Principles of AMV
- Aspects of generation of AMV data
- Management of AMV data
- Recognizing of your laboratory

### **AVAILABLE OPTION**

**COE-LC1814A –LC-MSMS & Mass Hunter Operations**



## **GAS CHROMATOGRAPHY MASS SPECTROMETRY SYSTEM (GC-MS) MAINTENANCE & TROUBLESHOOTING**

**Reference Code : COE-GC1815A**

### **NATURE**

This course is designed to GC-MS operators to provide the basic practical GC-MS maintenance knowledge and systematically isolate and correct common instrument and Mass Spectrometry problems.

### **PREREQUISITES**

Basic understanding of the fundamentals of GC-MS and/or a working knowledge of GC-MS are advantageous. But not compulsory as the course has been designed to deliver the knowledge via classroom sessions and work flow experience with the latest system of GC-MS.

### **COURSE CONTENTS**

- Basic GC-MS Mainframe
- Method Introduction
- Sample Introduction
- MS Detector optimization
- Auto Tuning
- Column and Column Fittings
- Performance Management
- Troubleshooting



## **GAS CHROMATOGRAPHY MASS SPECTROMETER (GC-MS) MASS HUNTER OPERATION & METHOD VALIDATION**

**Reference Code : COE-GC1816C**

### **NATURE**

Objective of this course is to provide the researchers, analysts, Laboratory Quality Controllers with operation of the various main modules of GC-MS and the Mass Hunter operations along with pre-decide applications. Knowledge in principles and practice in Analytical Method Validation (AMV) as per international compliance is delivered as one of the key components of this training module with respect to early decided method of application with the consent of the trainees. Classroom sessions and laboratory exercises are the key ways to deliver the knowledge.

### **PREREQUISITES**

Basic understanding of the fundamentals of Chromatography and/or a working knowledge of GC-MS. Knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### **COURSE CONTENTS**

- Exposure to the GC-MS Mass Hunter operations
- Acquisition to a Method of interest
- Data Analysis 1 – Qualitative
- Data Analysis 2 – Integration and Quantification
- SIM & Scan modes
- Importance of AMV
- Principles of AMV
- Aspects of generation of AMV data
- Management of AMV data
- Recognizing of your laboratory

### **AVAILABLE OPTION**

**COE-GC1816A –GC-MS & Mass Hunter Operations**

## **GAS CHROMATOGRAPHY TRIPLE QUADRUPOLE MASS SPECTROMETRY SYSTEM (GC-MSMS) MAINTENANCE & TROUBLESHOOTING**

**Reference Code : COE-GC1817A**

### **NATURE**

This course is designed to GC-MSMS operators to provide the basic practical GC-MSMS maintenance knowhow and systematically isolate and correct common instrument and Mass Spectrometry problems of GC-MSMS.

### **PREREQUISITES**

Basic understanding of the fundamentals of GC-MSMS and/or a working knowledge of GC-MSMS are advantageous. But not compulsory as the course has been designed to deliver the knowledge via classroom sessions and work flow experience with the latest system of GC-MSMS.

### **COURSE CONTENTS**

- Basic GC-MSMS Mainframe
- Sample Introduction
- MS Detector Optimization
- Auto Tuning
- Multiple Reaction Monitoring
- Library Matching
- Column and Column Fittings
- Performance Management
- Troubleshooting



## **GAS CHROMATOGRAPHY TRIPLE QUADRUPOLE MASS SPECTROMETER (GC-MSMS) MASS HUNTER OPERATION & METHOD VALIDATION**

**Reference Code : COE-GC1818C**

### **NATURE**

This course is designed for researchers, analysts, Laboratory Quality Controllers to acquire the knowledge of operation of the various main modules of GC-MSMS and the Mass Hunter operations along with pre-decide applications. Knowledge in principles and practice in Analytical Method Validation (AMV) as per international compliance is delivered as one of the key components of this training module. Classroom sessions and laboratory exercises are the key ways to deliver the knowledge.

### **PREREQUISITES**

Basic understanding of the fundamentals of Chromatography and/or a working knowledge of GC-MSMS. Knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### **COURSE CONTENTS**

- Exposure to the GC-MSMS Mass Hunter operations
- Acquisition to a Method of interest
- Data Analysis 1 – Qualitative
- Data Analysis 2 – Quantitative
- SIM & Scan modes
- Multiple Reaction Monitoring
- Library Matching
- Importance of AMV
- Principles of AMV
- Aspects of generation of AMV data
- Management of AMV data
- Recognizing of your laboratory

### **AVAILABLE OPTION**

**COE-GC1818A –GC-MSMS & Mass Hunter Operations**

## MICROWAVE PLASMA ATOMIC EMISSION SPECTROMETER OPERATION & METHOD VALIDATION

Reference Code : COE-AE1819C

### NATURE

This course is oriented to provide the researchers, analysts, QA/QC managers with operation of the various main modules of MP-AES along with pre-decide applications. Knowledge in principles and practice in Analytical Method Validation (AMV) as per international compliance is delivered as one of the key components of this training module. Classroom sessions and laboratory exercises are the key ways to deliver the knowledge.

### PREREQUISITES

Basic understanding of the fundamentals of AAS or working knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### COURSE CONTENTS

- Exposure to MP-AES
- Sample Introduction
- Acquisition to a Method of interest
- Data Analysis
- Importance of AMV
- Principles of AMV
- Aspects of generation of AMV data
- Management of AMV data
- Recognizing of your laboratory



### AVAILABLE OPTION

COE-AE1819B -AES Operation & Applications

## FT-IR OPERATIONS & APPLICATIONS

Reference Code : COE-IR1820B

### NATURE

Provided by the course the researchers, analysts can earn knowledge on operation of FT-IR along with pre-decide applications. Classroom sessions and laboratory exercises are the key ways to deliver the knowledge.

### PREREQUISITES

Basic understanding of the fundamentals of Molecular Spectroscopy and/or a working knowledge of FT-IR. Knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### COURSE CONTENTS

- Exposure to FT-IR
- Acquisition to a Method of interest
- Library Searching
- Report Generation
- Online Data Analysis
- Applications in FT-IR



## UV-VIS SPECTROMETERY OPERATION & METHOD VALIDATION

Reference Code : COE-UV1821C

### NATURE

This course is designed to provide the analysts, researchers, Quality Controllers with operation of UV-VIS along with pre-decide applications. Knowledge in principles and practice in Analytical Method Validation (AMV) as per international compliance is delivered as one of the key components of this training module. Classroom sessions and laboratory exercises are the key ways to deliver the knowledge.

### PREREQUISITES

Basic understanding of the fundamentals of Molecular Spectroscopy and/or a working knowledge of UV-VIS Spectroscopy. Knowledge of basic Analytical Chemistry and Windows OS are advantageous.

### COURSE CONTENTS

- Exposure to the UV-VIS Spectroscopy
- Operation of equipment
- Data Analysis – Qualitative
- Data Analysis – Quantitative
- Importance of AMV
- Principles of AMV
- Aspects of generation of AMV data
- Management of AMV data
- Recognizing of your laboratory



### AVAILABLE OPTION

COE-UV1821B –UV-VIS Spectrometry Operation & Applications

## SAMPLE PREPARATION OVERVIEW & POSITIONING

### Reference Code: COE-SP1822D

#### NATURE

The validity of analytical results is always questionable irrespective of how advance the technique used for analysis unless the correct sample preparation is attended. Therefore, sample preparation is an essential integral of any sample analysis protocol. Towards the direction, this course is designed to chromatographic and spectroscopic instrumentation analysts, researchers, operators to provide the basic practical and theoretical knowhow of sample preparation with the latest and advanced techniques available. Also this module identifies common problems in sample preparation for instrumentation based analyses and find the pathways for respective solutions for the problems.

#### PREREQUISITES

Basic understanding of the fundamentals of Chromatography and Spectroscopy. Working knowledge of all type of chromatographic and spectroscopic instruments is advantageous. But not compulsory as the course has been designed to deliver the knowledge via classroom sessions and work flow hands on experience with the latest systems of instruments.

#### COURSE CONTENTS

- Quick overview of the sample prep-techniques
- Advanced sample preparation techniques with products
- Sample prep-techniques for QuEChERS and related aspects
- Sample prep-techniques for EMR and related aspects
- Reducing system downtime with cleaner samples
- Work flow sessions for EMR and QuEChERS and comparison by using chromatograms
- Work flow sessions for SPE and Chem. elute



Pharmaceuticals (bio analysis)



Clinical (toxicology/forensics)



Food



Environmental



## **ANALYTICAL METHOD VALIDATION (AMV) IN CHEMICAL ANALYSIS – THEORY**

**Reference Code : COE–MV1823D**

### **NATURE**

This course imparts in depth knowledge on AMV; an essential requirement of the researchers, analysts those engage in new method development, laboratory accreditation etc. Further, the course is important to people in the field of Chemical Sciences who wish to develop their career in laboratories with global compliance. The course has been designed so that the depth of theoretical knowhow accommodated in you during the training module can certainly be implemented in your practical needs in the laboratory moreover to the fundamental strength.

### **PREREQUISITES**

Basic understanding of the fundamentals in Analytical Chemistry. Working knowledge inside a laboratory is an advantage.

### **COURSE CONTENTS**

- Need of analytical method development
- Prerequisites to use the developed method in practice
- Global context of AMV
- Method Validation vs Verification
- Aspects of AMV
- Documentation

## **ANALYTICAL METHOD VALIDATION (AMV) IN CHEMICAL ANALYSIS – THEORY & PRACTICE**

**Reference Code : COE–MV1824D**

### **NATURE**

This course designed to provide in depth knowledge on AMV through theory and practice. The knowledge acquired on total aspects of AMV makes enable participants to work independently in laboratories towards method validation, method verification, accreditation etc.

### **PREREQUISITES**

Basic understanding of the fundamentals in Analytical Chemistry. Successful completion of AMV theory module (COE–MV1823D). Working knowledge inside a laboratory is an advantage.

### **COURSE CONTENTS**

- Importance of AMV in global compliance
- Principles of AMV
- Practice in AMV
- Generation of AMV data
- Documentation of the empirical findings
- Qualifications of the equipment and other accessories for AMV

## MEASUREMENT UNCERTAINTY IN CHEMICAL ANALYSIS – THEORY & PRACTICE

Reference Code : COE-UC1825D

### NATURE

There is no absolute data in chemical analysis. But the validity of the data is ensured when expressed the analytical measurement of your analysis along with the actual uncertainty associated with. Such data are technically sound and empowered with the decision making strength. This is thus a prerequisite of a laboratory that expects to generate acceptable analytical data and, path towards achieving accreditation and global recognition.

### PREREQUISITES

Basic understanding of the fundamentals in Analytical Chemistry. Working knowledge inside a laboratory is an advantage.

### COURSE CONTENTS

- Need of uncertainty measurements
- Concepts of measurement uncertainty
- Steps in uncertainty measurement
- Basic statistical tools for uncertainty measurement
- Common approach in measurement uncertainty – a working guide

## GOOD LABORATORY PRACTICES

Reference Code : COE-GL1826D

### NATURE

Good Laboratory Practice (GLP) training course is updated regularly to provide Laboratory Personnel & Quality Assurance Personnel with current GLP trends and information. This course is designed for staff working in analytical laboratories those who wish to recognize their laboratory in domestic and global contexts.

### COURSE CONTENTS

- Basics of GLP and good documentation practices
- GLP requirements into your daily work tasks and projects
- Working knowledge of the ISO 17025 and OECD GLP principles
- Roles and functions of key personnel within a GLP study
- Development of GLP compliant documentation
- Quality Assurance Unit and its role in GLP management
- Implementation of GLP at your laboratory

## LABORATORY ACCREDITATION PRINCIPLES & PRACTICE

Reference Code : COE-LA1827D

### NATURE

The Course has been designed to integrate all changes to ISO 17025: 2005 and discuss the new standard ISO 17025: 2017. Accordingly scope of the new standard is addressed against general structural, resource, process and management system requirements. It includes practical concepts such as document control, preventive and corrective actions, internal audits, traceability, measurement uncertainty, and method validation. This course consists of lectures, discussions, and exercises, including case studies.

### PREREQUISITES

Experience in laboratory operations and understanding the need of the laboratory QA/QC. Knowledge of basic Analytical Chemistry is an additional advantage.

### COURSE CONTENTS

- Requirements of the ISO/IEC 17025:2017 standard
- Develop, implement and maintain an effective laboratory management system
- Understanding and applying documentation requirements
- Monitoring and continually improving quality control processes
- Internal and external auditing
- Prepare for the accreditation
- ISO/IEC 17025: 2005 vs ISO/IEC 17025: 2017 – an overview

## LABORATORY SAFETY MANAGEMENT & PRACTICES

Reference Code: COE-LS1828D

### NATURE

Laboratory safety is an imperative basic component of laboratory practices irrespective of the nature of the laboratory and extent of facilities available in. All levels of soft resources (people) attached to a laboratory are essentially enlightened with basic safety practices and the specific safety measures with respect to individual requirements of the place. Therefore, the training module has been accommodated to cover all the general safety knowhow measures common to any laboratory with the opening to address any individual requirement of a laboratory with prior understanding.

### PREREQUISITES

People who actively working inside a laboratory and those who wish to develop their career attached to a laboratory. A particular training is provided to identical or likely laboratory people chosen in advance at a time.

### COURSE CONTENTS

- Justification for need in laboratory safety
- OSHA accident investigations
- Identification of Hazards and Risks
- Management of Hazards and Risks
- Safety Operation Practices (SOPs)
- Personal Protective Equipment (PPEs)
- Material Safety Data (MSDs)
- Safe use and storage
- Emergency response
- Good Management Practices (GMPs)

### Awarding of certificate

Participants who successfully complete the theoretical, practical and working modules as applicable to each course module are eligible for a certificate.