European Training Institute Thermo Scientific Training Course Agendas
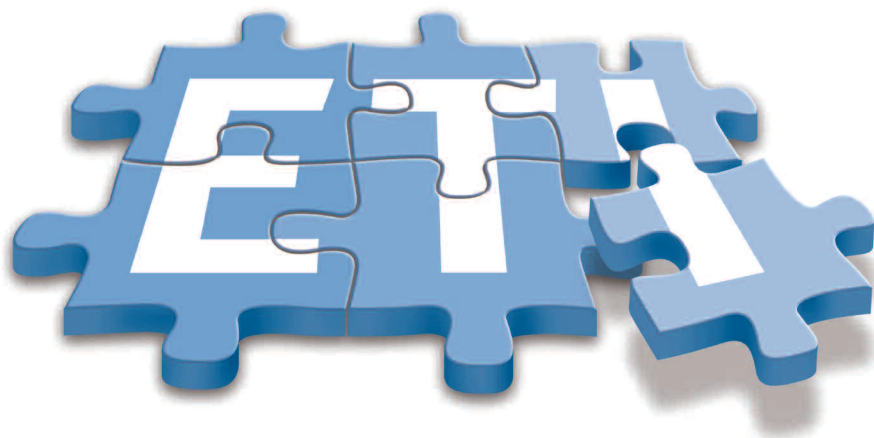
Simplifying Complexity

Basel, *SWITZERLAND*

Bremen, *GERMANY*

Dreieich, *GERMANY*

Ecublens, *SWITZERLAND*

Hemel Hempstead, *UK*

London, *UK*

Paris, *FRANCE*

Pavia, *ITALY*

Thermo SCIENTIFIC

All The Pieces Are Coming Together...

Thermo Scientific training courses offered by the European Training Institute take place at the Thermo Fisher Scientific facilities in Hemel Hempstead (UK), Dreieich (Germany), Bremen (Germany), Paris (France), and in both Basel and Ecublens (Switzerland). Courses are also available in our collaborative laboratories in London (UK), and Pavia (Italy). The institute facilities provide an atmosphere which is both relaxing and conducive to learning, comprising of custom-built laboratories, each containing dedicated instrumentation for hands-on training and several lecture rooms for presentation style instruction.
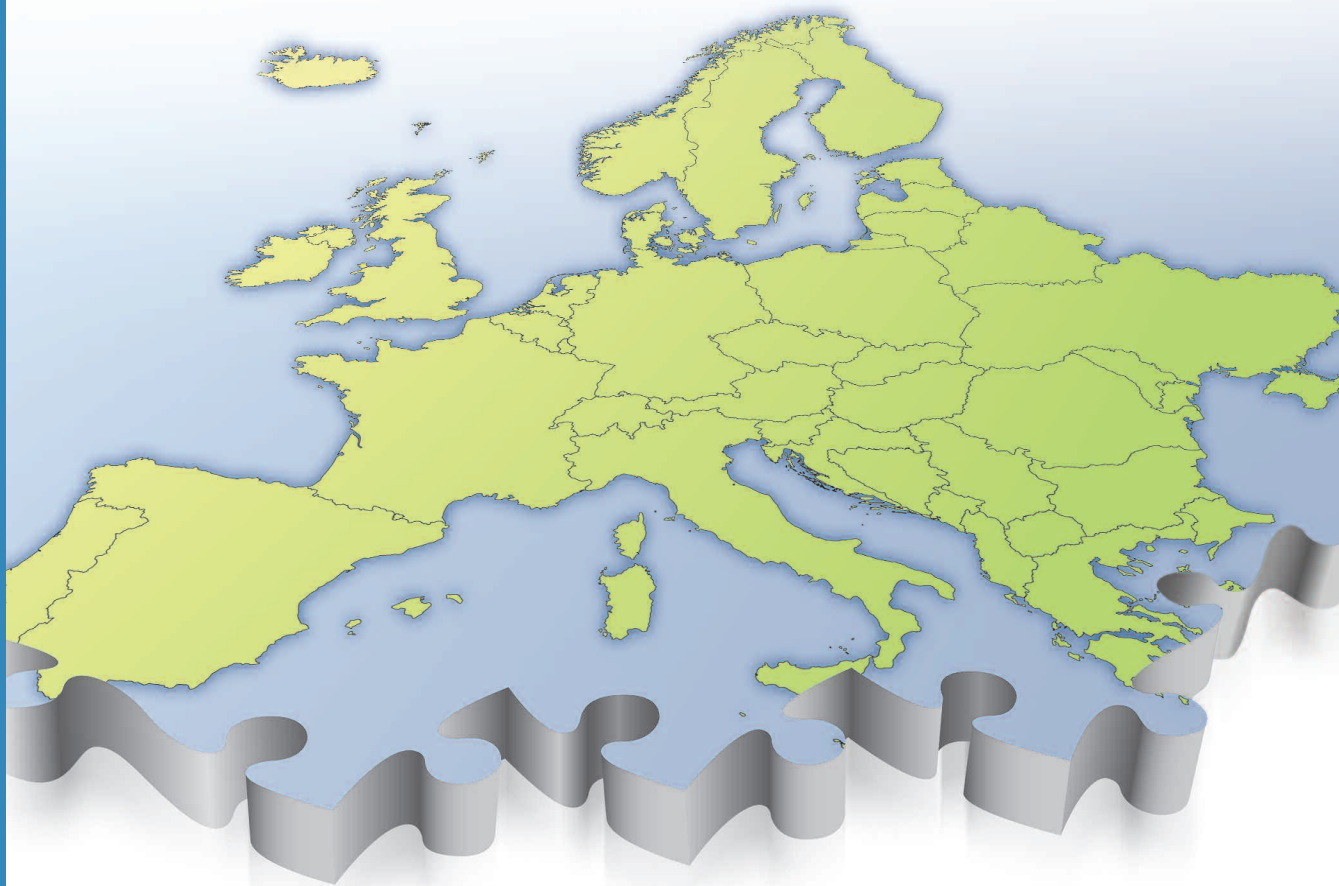
All Thermo Scientific training courses are carried out in locations that are a short journey away from major European airports and delegates have the opportunity to enjoy the numerous sights that these European cities have to offer. A variety of Thermo Scientific Operator and Software courses are available, however please be aware that certain courses can only be scheduled upon request.

Contents

Life Sciences Mass Spectrometry

Proteomics

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
Ion Trap Biotech Operations	x	x
LTQ Orbitrap™ Biotech Operations	x	x
LTQ FT™ Biotech Operations		x
MALDI LTQ™ and LTQ Orbitrap Biotech Operations		x
TSQ™ Biotech Operations		x
Quantitative Proteomics		x

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AS:			
	Part of Instrument Operator Training	Standalone Training Organized Upon Request	Webinar	On-line Training Course
Proteome Discoverer™	x	x	x	x
SIEVE™	x	x	x	
PEAKS Studio™	x	x	x	
ProMass Deconvolution	x	x	x	

NB: The course options are subject to change. For up to date information on course availability, please contact us at euro.training.sid@thermofisher.com

Training: Ion Trap Biotech Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new ion trap user with instruction for electrospray ionization (ESI) of proteins and peptides, tuning using nanospray and optimization of data-dependent acquisition. In addition there will be a discussion of qualitative analysis and processing for Thermo Scientific Xcalibur and Proteome Discoverer software packages, followed by hands on application of software to data sets. When ETD training is requested, the following topics can be incorporated to the course timetable below: maintenance of ETD source, optimization, tuning and calibration of the ETD components, experimental set-up, ETD data processing.

The course focuses on the analysis of proteins and peptides. Quantitation and detailed small molecule analysis are not covered in this course. Students desiring detailed training on qualitative/quantitative data processing and a complete discussion of the Xcalibur™ software package should take a Thermo Scientific Ion Trap Operations course in lieu of this course, or take the Xcalibur Training Module as well.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
Ion Trap Theory	Compound Tuning for MS	Introduction to Qual Browser	Static Nanospray
Ion Trap Hardware & Maintenance	Nano-flow LC Method Development	Proteome Discoverer Software	Data Processing Using Proteome Discoverer
LC Maintenance	Data Dependent Method Design	Xcalibur Software for Qualitative Methods	Infusion Experiments
Calibration	Xcalibur Sequence Set up	Processing of Post Translational Modification Methods	Intact Protein Analysis
Understanding the Tune Page Parameters			Discussion of Additional Software Packages Available for Proteomics

Training: LTQ Orbitrap Biotech Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

This course is designed for users that have previous LC-MS experience and are interested in protein and peptide analysis. It is specific to the Thermo Scientific LTQ Orbitrap mass spectrometer and will include instruction for electrospray ionization (ESI) of proteins and peptides, instruction for setting up dynamic and static nanospray (NSI), calibration and basic maintenance, setup and optimization of various data-dependent acquisition methods. In addition, there will be an in depth discussion of qualitative analysis and processing of accurate mass methods with Thermo Scientific Xcalibur, Proteome Discoverer, FT, and SIEVE software programs. When ETD training is requested, the following topics can be incorporated to the course timetable below: maintenance of ETD source, optimization, tuning and calibration of the ETD components, experimental set-up, ETD data processing.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
Ion Trap & Orbitrap Theory	Compound Tuning for MS	Introduction to Qual Browser	Static Nanospray
Ion Trap & Orbitrap Hardware & Maintenance	Nano-flow LC Method Development	Proteome Discoverer Software	Data Processing Using Proteome Discoverer
LC Maintenance	Data Dependent Method Design	Xcalibur Software for Qualitative Methods	Infusion Experiments
Calibration	Xcalibur Sequence Set up	Processing of Post Translational Modification Methods	Intact Protein Analysis
Understanding the Tune Page Parameters	Working with Accurate Mass		Additional Software Packages Available for Proteomics

Life Sciences Mass Spectrometry
Proteomics

Training: LTQ FT Biotech Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The Thermo Scientific LTQ FT Biotech course is designed for users that have previous LC-MS experience and are interested in protein and peptide analysis. It is specific to the Thermo Scientific LTQ FT mass spectrometer and will include instruction for electrospray ionization (ESI) of proteins and peptides, tuning using nanospray and optimization of data-dependent acquisition. In addition, there will be an in depth discussion of qualitative analysis and processing accurate mass methods with Thermo Scientific Xcalibur and Proteome Discoverer software packages followed by hands-on applications of software to data sets. The training content can be customized for the customer's needs.

The course material can include:

- Ion Trap Theory
- FT ICR MS Theory
- Tuning and Calibration
- Hands-on ESI and NSI MS
- Instrument Method Development for LC-FT MS
- Nano-flow LC Method Development
- Data Dependent Method Design

- Post Translational Modification Methods
- Parallel Detection Methods
- Accurate Mass Methods
- XCalibur Software for Qualitative Methods
- Proteome Discoverer Software
- Basic LTQ Maintenance
- Additional Software Packages Available for Proteomics

Training: MALDI LTQ and MALDI LTQ Orbitrap Biotech Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new operator with the Thermo Scientific MALDI series of instruments. This will allow the new operator to perform manual inspection of whole sample, or utilize sample separation with LC-MALDI capabilities as well as metabolomic studies with Tissue imaging. The course covers a spectrum of topics ranging from instrument theory, instrument maintenance, sample preparation, instrument configuration, data acquisition approaches, and data processing.

The course material can include:

- Description of the Instrument Hardware, including the Source, Analyzer and Detection Systems, as well as Explanation of the Theoretical Principles behind each Component
- Correct Instrument Configuration for MALDI Analysis
- Tune Page Parameter Settings including Description of Injection Control, Define Scan Window, MALDI Source Window
- Explanation of Automatic Gain Control (AGC), Crystal Positioning System (CPS), Auto Spectrum Filter (ASF)
- Instrument Calibration

- Plate Selection and Plate Calibration
- Design Data Dependent Methods using the Instrument Setup Page
- Data Processing with Xtract and Proteome Discoverer
- Protein Calculator and Recalibrate OffLine
- Design Data Dependent Methods with regard to LC MALDI Application (DevKit feature)
- Tissue Imaging Application, Tune User Interface, Method Setup and Running Samples
- ImageQuest Usage

Life Sciences Mass Spectrometry
Proteomics

Training: TSQ Biotech Operations

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific TSQ (Quantum and Vantage) user with instrument operation for the purposes of protein and peptide quantitation. It includes instruction for electrospray (ESI) and nanospray (NSI) ionization of proteins and peptides, instrument calibration and tuning, data collection, maintenance and functionality of Thermo Scientific Xcalibur, Pinpoint and LCQuan software packages. The training content can be further customized according to the customer's specific needs.

The course material can include:

- TSQ Quantum and Vantage Hardware and Theory
- Tuning and Calibration
- Hands-on ESI and NSI MS
- Maintenance
- Parameters necessary for Good Quantitation

- Xcalibur Software for Quantitative Methods
- Pinpoint Software
- Instrument Method Development
- LCQuan Software
- Data Processing

Training: Quantitative Proteomics

Course Objective:

This course is aimed towards operators of Thermo Scientific ion trap, LTQ Orbitrap and TSQ instruments, who want to learn the latest techniques of quantitative proteomics. This training course will enable the operator to take their protein identification skills a step further by learning how to measure relative as well as absolute protein expression levels in biological samples. The training will demonstrate experiment design, programming of the LC-MS methods on the Thermo Scientific instrument of interest, and data evaluation using the appropriate Thermo Scientific software tools.

The course focuses specifically on the quantitation of proteins and peptides. Basic operation of ion trap, LTQ Orbitrap and TSQ instruments, as well as basic Xcalibur training, are not covered in this course. Students desiring this basic training should take an Operations course specific to their instrument of choice, or take the Xcalibur Training Module in lieu of this course.

The course material can include:

- LC-MS Method Design for Quantitation using Instrument Setup
- Data Quality Analysis using the Qual Browser
- Absolute Quantitation using LCQuan and the Xcalibur Tools (Processing Setup, Sequence Setup and Quan Browser)
- Label Free Quantitation using the SIEVE Software Package

- Quantitation of Peptides using Stable Isotope Labeling with Amino Acids in Cell Culture (SILAC) and the Proteome Discoverer Software
- Quantitation of Peptides with Isobaric Mass Tagging (iTRAQ and TMT) and Proteome Discoverer Software
- SRM (Selected Reaction Monitoring) Experiments using Pinpoint Software

Life Sciences Mass Spectrometry

Proteomics

Training: Proteome Discoverer Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to provide new users with the ability to use the Thermo Scientific Proteome Discoverer software to its full potential. Proteome Discoverer is a flexible, expandable software platform for the analysis of qualitative and quantitative proteomics data. Detailed presentations will be given on all modules together with hands on exercises in order to ensure understanding of all the processes. The students will become familiar with the subjects of database manipulation, database search parameters as well as interpretation of results. By the end of the course they should be able to apply all software tools for their own purposes.

The course material can include:

- Experimental Setup of Data Dependent Acquisition Methods for Protein Identification
- Database Manager
- Editing of Modifications
- Searching for Modifications

- Template Creation and Use
- Searching Against Databases
- Results Interpretation
- Multi Reports/Layouts
- Quantification Options

Training: SIEVE Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

Thermo Scientific SIEVE software provides label-free quantitative differential expression analysis of proteins and peptides from the comparison of multiple LC/MS datasets. It is a statistically rigorous tool for analyzing data from biomarker discovery experiments.
This course will allow the new user to use all modules of the software successfully. The students will become familiar with the subjects of chromatographic alignment, statistical evaluation and database searching. By the end of the course they should be able to apply all software tools for their own purposes.

Training: PEAKS Studio Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to provide new users with the ability to use the Thermo Scientific PEAKS Studio de novo sequencing software to its full potential. An introduction will be provided on the optimization and set up of data dependent acquisition methods for the purpose of de novo sequencing. Additionally, detailed presentations will be given on all PEAKS Studio modules together with hands on exercises in order to ensure understanding of all the processes. The students will become familiar with the subjects of manual and automatic de novo sequencing including post translation modifications, homology searches, as well as interpretation of the results. By the end of the course they should be able to apply all software tools for their own purposes.

Training: ProMass Deconvolution Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to provide new users with the ability to use Thermo Scientific ProMass Deconvolution software to its full potential. ProMass Deconvolution is an automated biomolecule deconvolution and reporting software package that is used to process non high-resolution ESI/LC/MS data or single ESI mass spectra acquired with the Xcalibur data system. ProMass is ideal for the analysis of intact proteins and oligonucleotides and is optimized for high-throughput applications. The course will cover all aspects of the deconvolution algorithm and by the end of the course the students should be able to apply all software tools for their own purposes.

Life Sciences Mass Spectrometry
Small Molecules-Structure Elucidation

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
Ion Trap Operations	x	x
LTQ Orbitrap Operations		x
LTQ FT Operations		x
Metabolite Identification Using Metworks™ & Mass Frontier™		x
Structure Elucidation of Unknowns		x

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AS:			
	Part of Instrument Operator Training	Standalone Training Organized Upon Request	Webinar	On-line Training Course
Metworks-Mass Frontier	x	x	x	x
Mass Frontier	x	x		
SIEVE	x	x	x	

NB: The course options are subject to change. For up to date information on course availability, please contact us at euro.training.sid@thermofisher.com

Life Sciences Mass Spectrometry
Small Molecules-Structure Elucidation

Training: Ion Trap Operations

Course Objective:

The aim of this training course is to familiarize the new ion trap user with basic instrument operation, including API and ion trap theory (linear and 3D, single and dual traps), tuning, calibration, data collection, maintenance, and general functionality of the Xcalibur software package. The focus of this course is small molecule analysis. No attempt is made to teach protein mapping or peptide sequencing. Students desiring focused instruction on peptide/protein analysis should explore the possibility of taking one of the Biotech courses on offer, in lieu of this course.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
Ion Trap Hardware	3D and 2D Ion Trap Theory (MS/MS Experiment)	Introduction to Library Browser	Introduction to Quan Browser
API Theory (ESI and APCI mode)	Compound Tuning for MS/MS Experiment	Qualitative Processing Method Set up	XReport Quan Report
API Stack Maintenance	MS/MS Data Interpretation Using Mass Frontier	XReport Qual Report	Data Dependent Analysis
3D and 2D Ion Trap Theory (MS Experiment)	Introduction to Qual Browser	Quantitative Processing Method Set up	
Basic Tune and Calibration	Xcalibur LC-MS Method Set up	Quan Sequence Set up	
Compound Tuning for MS experiment	Xcalibur Sequence Set up		

Training: LTQ Orbitrap Operations

Course Objective:

The LTQ Orbitrap Operations course is designed for users that have previous LC-MS experience and would like to familiarize themselves with the Thermo Scientific LTQ Orbitrap mass spectrometer. The course will cover API and ion trap theory, tuning, calibration, data collection and general functionality of the Xcalibur software. The emphasis of the training is on small molecule analysis, accurate mass applications and data processing.

The course material can include:

- LTQ 2D Ion Trap Theory (single and dual traps)
- Orbitrap Theory
- Basic Tune and Calibration
- Compound Tuning for MS and MS/MS purposes
- Hands-on APCI and ESI MS
- Instrument Method Development for LC/FTMS
- Introduction to Qual Browser

- Accurate Mass Methods
- Data Dependent Analysis
- Quantitative Processing: Method Set up
- Quan Sequence Set up
- Introduction to Quan Browser
- XReport Quan Report

Life Sciences Mass Spectrometry

Small Molecules-Structure Elucidation

Training: LTQ FT Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The Thermo Scientific LTQ-FT Operations course is designed for users that have previous LC-MS experience. Experience in FTMS is not required. The course covers mass spectrometry and chromatography in general with an emphasis on small molecule, accurate mass applications. The training content can be customized for the customer's needs.

The course material can include:

- Ion Trap Theory
- ICR Theory
- Tuning and Calibration
- Hands-on APCI and ESI MS
- Instrument Method Development for LC/FTMS
- Multi-stage MS^n Method Building
- Parallel Detection Methods
- Accurate Mass Methods
- Xcalibur Software
- Basic LTQ Maintenance

Training: Metabolite Identification using Ion Trap Instrumentation and Metworks-Mass Frontier

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize new Thermo Scientific ion trap users with optimal instrument operation and software options for performing efficient identification of metabolites. The course will cover API and ion trap theory, tuning, calibration, data collection and general functionality of the Xcalibur software. In addition, data processing for the purposes of metabolite identification and structure elucidation will be performed using the Mass Frontier and Thermo Scientific Metworks software packages.

The course material can include:

- Ion Trap and Orbitrap Theory
- Basic Tune and Calibration
- Compound Tuning for MS and MS/MS purposes
- Method Development
- Data Dependent Analysis and Accurate Mass Methods
- Introduction to Qual Browser
- Identification of Metabolites using Metworks
- Structure Elucidation using Mass Frontier
- Cross-Species Comparison using Mass Frontier

Life Sciences Mass Spectrometry
Small Molecules-Structure Elucidation

Training: Structure Elucidation of Unknowns

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize new Thermo Scientific ion trap users with optimal instrument operation and software options for performing efficient structure elucidation of unknown small molecules such as: impurities in synthetic samples, toxic compounds, explosives, environmental components, etc. The course will cover API and ion trap theory, tuning, calibration, data collection and general functionality of the Xcalibur software. In addition, Mass Frontier will be used for automatic chromatographic processing, library building and searches of unknowns, as well as spectra interpretation.

The course material can include:

- Ion Trap and Orbitrap Theory
- Basic Tune and Calibration
- Compound Tuning for MS and MS/MS purposes
- Method Development
- Data Dependent Analysis and Accurate Mass Methods

- Introduction to Qual Browser
- Component Detection using Mass Frontier
- Creation and Interrogation of Libraries in Mass Frontier
- Spectra Interpretation using Mass Frontier

Training: Metworks-Mass Frontier Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to provide new users with the ability to use the Metworks and Mass Frontier software packages to their full potential for the purposes of metabolite identification. Detailed presentations will be given on all the modules together with hands on exercises in order to ensure understanding of all the processes. Using Metworks the students will identify metabolites using the different search options the software offers. They will then use Mass Frontier to perform structure elucidation of any unknowns and all the identified metabolites will be finally saved and searched in libraries. By the end of the course the attendees should be able to customize all software applications for their own purposes during metabolic experiments.

The course material can include:

- Metabolite Identification: Identification of Predicted Metobolites, Chro Search and Correlation, Isotope Search, Component Detection, Mass Defect Filter, Background Subtraction, Reporting
- Creation and Interrogation of Libraries: Database Manager, Structure Editor, Chromatogram Processor

- Classification Methods: Spectra Classifier, Spectra Projector, Neural Networks
- Spectra Interpretation: Short course on CID spectra interpretation, Fragments and Mechanisms, Fragmentation Library

Life Sciences Mass Spectrometry
Small Molecules-Structure Elucidation

Training: Mass Frontier Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this course is to provide new users with the ability to use the Mass Frontier software to its full potential. Mass Frontier offers many unique, sophisticated features for efficient processing, organizing, and interpreting of mass spectral data. These can be applied for the purposes of structure elucidation of unknown small molecules in various fields, such as: impurity identification, environmental analysis, toxicology analysis, metabolite identification, etc. Detailed presentations will be given on all Mass Frontier modules together with hands on exercises in order to ensure understanding of all the processes. The students will become familiar with the subjects of database generation and manipulation, spectra interpretation, as well as compound classification with the use of statistics. By the end of the course they should be able to apply all software applications for their own purposes.

The course material can include:

- Creation and Interrogation of Libraries: Database Manager, Structure Editor, Chromatogram Processor
- Classification Methods: Spectra Classifier, Spectra Projector, Neural Networks
- Spectra Interpretation: Short course on CID spectra interpretation, Fragments and Mechanisms, Fragmentation Library

Training: SIEVE Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

Thermo Scientific SIEVE software provides a label-free quantitative analysis of metabolic pools by comparison of multiple LC-MS datasets. It can be used to compare the metabolomes of control versus treated samples as well as from time-course experiments. This Thermo Scientific course will enable the new user to utilize all the modules of this software package in order to perform statistically valid metabolome experiments. The course topics include a familiarization with chromatographic alignments, statistical evaluation of metabolic pool sizes and exact mass database queries. By the end of the course the student will be able to apply all software tools to fulfill their experimental requirements.

Life Sciences Mass Spectrometry
Small Molecules-Quantitation and Screening

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
TSQ Operations	x	x
Exactive™ Operations	x	x
Surveyor MSQ *Plus*™ Operations		x
TLX Series Systems Operations		x

THERMO SCIENTIFIC LAYERED APPLICATION OPERATOR COURSES	AVAILABLE AS:	
	Part of Instrument Operator Training	Standalone Training Organized Upon Request
EQuan™	x	
QuickQuan™	x	x
FAIMS	x	

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AS:			
	Part of Instrument Operator Training	Standalone Training Organized Upon Request	Webinar	On-line Training Course
Xcalibur	x	x		
LCQuan™	x	x		
TraceFinder™	x	x		
ToxID™	x	x		
QuickCalc™	x	x		

NB: The course options are subject to change. For up to date information on course availability, please contact us at euro.training.sid@thermofisher.com

Life Sciences Mass Spectrometry
Small Molecules-Quantitation and Screening

Training: TSQ Operations
REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new TSQ (Quantum and Vantage) user with instrument operation including atmospheric pressure ionization, quadrupole principles, compound tuning, instrument calibration, data collection, maintenance and general functionality of Xcalibur and LCQuan software packages. The focus of this Thermo Scientific training course is small molecule quantitation. Customers interested in the quantitation of peptides and proteins should choose the TSQ Biotech Operations course instead.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
TSQ Hardware Components	Optimization and Mass Calibration of the TSQ	Xcalibur Quantitative Processing	Library Browser and Library Creation
Maintenance	Critical Optimization Parameters	Quantitative Reporting	Xcalibur Qualitative Processing
TSQ Tune Standard Views	Compound Optimization	Qual Browser	Qualitative Reporting Using XReport
TSQ Tune Expert View	Method and Sequence Set-up for SRM Analysis	Quantitation Using LCQuan	Optimization by APCI
EZ Tune	Quantitative SRM and HSRM Analysis by ESI and HESI		Advanced Scan Functions: Data Dependent Analysis, QED & RER

Training: Exactive Operations
REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific Exactive user with the Orbitrap technology. This will cover API and Orbitrap theory, tuning, calibration, data collection and general functionality of the Thermo Scientific Xcalibur, PathFinder™ and ToxID software packages. The emphasis of the training is on small molecule analysis, accurate mass applications and data processing.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM
API Theory (ESI and APCI mode)	Alternative HRMS and HCD Experimental Set up	Quantitative Processing: Method Set up
Orbitrap Theory	Introduction to Qual Browser	Quan Sequence Set up
Basic Tune and Calibration	Introduction to Library Browser	Introduction to Quan Browser
Compound Tuning for MS experiment	Automated Screening using ToxID	XReport Quan Report
	Analysis using PathFinder Software	Basic Instrument Maintenance

Life Sciences Mass Spectrometry
Small Molecules-Quantitation and Screening

Training: Surveyor MSQ *Plus* Operations

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific Surveyor MSQ *Plus* user with instrument operation including atmospheric pressure ionization, quadrupole principles, compound tuning, instrument calibration, data collection, maintenance and general functionality of the Xcalibur software package.

The course material can include:

- MSQ Hardware Components
- Maintenance
- Tuning and Mass Calibration
- Compound Optimization
- Xcalibur Software Instrument Method
- Sequence Set up
- Quantitative SIM Analysis by Electrospray
- Xcalibur Quantitative Processing
- Xcalibur Quantitative Merlin Reports or XReports

- Parameters for good Quantification
- LCQuan Software
- Quantification by APCI
- Cone Fragmentation
- Xcalibur Qual Browser
- Library Browser and Library Creation
- Xcalibur Qualitative Processing
- Xcalibur Qualitative Merlin Reports or XReports

Training: TLX Series Systems Operations

Course Objective:

The aim of this training course is to familiarize the new user with TurboFlow technology that can be used in conjunction with the Thermo Scientific TSQ instrument series and allows elimination of sample preparation techniques. The training will cover the theory of turbulent flow chromatography, hardware setup and maintenance, method setup and data acquisition. All aspects of the Thermo Scientific Aria software will be covered. The students will be guided through all principles of operation and hands on examples will be used for successful method development.

The course material can include:

- Theory of Turbulent Flow Chromatography
- Hardware Set Up: Autosampler, Injector Ports, Loading and Eluting Pumps, Multiple Column Module (MCM)
- Aria Software: Method Creation, Batch Set Up, Pressure Trace Read Backs
- Quick Elute Methods
- Focus Mode Method Set Up
   - *Turbo Flow Column Selection*
   - *Elution Optimization from Analytical Columns*
   - *Method Variables*

Life Sciences Mass Spectrometry

Small Molecules-Quantitation and Screening

Training: EQuan

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this course is to familiarize the new user with the Thermo Scientific EQuan large volume injection technique that can be used with TSQ instrument series. The training will cover the principles of operation and the theory of the method, hardware setup and maintenance, method setup and data acquisition. All considerations with respect to large volume injections will be discussed.

Training: QuickQuan

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

Thermo Scientific QuickQuan software combined with the TSQ instrument series is designed to speed up the pace of LC-MS/MS analysis in drug discovery through intelligent automation and provides a total solution for automated quantification. The dedicated training course will provide the operator with the ability to setup and optimize the application and understand the functionality of all the software and hardware components involved.

The course material can include:

- Functional Overview of Hardware
- Overview of Autosampler Cycle Composer
- Overview of Database Programs
- Selection of QuickQuan Data Sources and Databases
- Setup of Analyte Compounds and Drug Sets

- Automated Compound Optimization
- Reviewing Optimization Results
- Data Acquisition
- Quantitative Data Review and Reporting

Training: FAIMS

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new user with the high Field Assymetric Ion Mobility Spectrometry technique. The course will introduce the operator to the theory of this method, the hardware, maintenance and operation and will include hands on compound optimization and troubleshooting. The advantage of using FAIMS for the purposes of quantitative analysis will also be demonstrated.

Life Sciences Mass Spectrometry
Small Molecules-Quantitation and Screening

Training: Xcalibur Software

Course Objective:

This course is designed to familiarize the student with the operation of Thermo Scientific Xcalibur software for use in qualitative and quantitative analysis. Detailed presentations will be given on all Xcalibur modules together with hands on exercises in order to ensure understanding of all the processes. The students will become familiar with the subjects of method and sequence set-up, data manipulation, automated processing and report generation. By the end of the course they should be able to apply all software tools for their own purposes.

The course material can include:

- Xcalibur LC-MS Method Set up
- Xcalibur Sequence Set up
- Introduction to Qual Browser
- Introduction to Library Browser
- Qualitative Processing

- Qual Reporting
- Quantitative Processing: Introduction to Method Set up
- Quan Sequence Set up
- Introduction to Quan Browser
- Quan Reporting

Training: LCQuan Software

Course Objective:

Thermo Scientific LCQuan is a quantitation software package specifically designed to allow the user to comply with the code of federal regulations (21 CFR Part 11). The training course aims to cover all software functionality. The new user will learn how to set up suitable instrument methods for triple quadrupole, ion trap, Orbitrap and Exactive mass spectrometers. In addition quantitative processing set up and report template generation using Xreport will be covered.

Life Sciences Mass Spectrometry

Small Molecules-Quantitation and Screening

Training: TraceFinder Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to provide new users with the ability to use the Thermo Scientific TraceFinder software to its full potential. The TraceFinder software allows you to deal with high throughput quantitation in trace analysis in the Food Safety environment and works together with Xcalibur software, the operating system for all Thermo Scientific mass spectrometers. Detailed presentations will be given on all TraceFinder functionalities together with hands on exercises in order to ensure understanding of all the processes.

The course material can include:

- Configuration: User and Project Administration, Compound Data Storage, Application Configuration
- Method Development: Method Creation (Method Forge or Import Processing Method), Export SRM Data

- Acquisition: Batch Creation, Batch Templates
- Data Review and Reporting

Training: ToxID Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to provide new users with the ability to use the Thermo Scientific ToxID to its full potential. ToxID is simple and easy-to-use software that substantially simplifies LC-MS/MS toxicology screening workflows for clinical and forensic laboratories. Detailed presentations will be given on all the options available with hands on exercises in order to ensure understanding of all the processes. Using ToxID the students will be able to perform automated compound identification from Xcalibur data files using the different search options the software offers. By the end of the course they should be able to apply all software applications for their own purposes.

The course material can include:

- Instrument Method Development for ToxID processing purposes
- MS/MS Library Creation

- Processing Configuration File Set up
- Reporting

Training: QuickCalc Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

Thermo Scientific QuickCalc software is a tool for the automated conversion of Absorption, Distribution, Metabolism & Excretion study raw data to a manageable result report that can be used for hepatic clearance, metabolic stability and permeability. The aim of the training course is to provide new users of the QuickCalc Software with an overview of analytical data management using the software.

The course will demonstrate the setup of a sample set, the data selection, the use of study templates to identify and integrate peaks of interest and the build of calibration curves. Unknown samples will be used for quantitation, calculation of ADME results and reporting.

The course material can include:

- Sample Set Selection, General Data Review
- Calibration and Calculation of Results
- Use of the General Chromatography Viewer
- Use of PK Calculator
- Use of Hepatic Clearance & Metabolic Stability Calculators

- Use of Permeability Calculator for Caco-2 and PAMPA
- Use of Pre-Determined Study Templates
- Generation of New Templates
- Report Generation
- QuickCalc Integration With Xcalibur, LCQuan & QuickQuan Acquisition Packages

Gas Chromatography
GC & GC-MS

GC

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
GC Operations		x

GC-MS

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
DSQ™ Operations	x	x
PolarisQ/ITQ™ Operations	x	x
TSQ Quantum GC™ Operations	x	x
DFS Operations	x	x

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AS:			
	Part of Instrument Operator Training	Standalone Training Organized Upon Request	Webinar	On-line Training Course
Xcalibur	x	x		
QuanLab™ Forms	x	x	x	x
ToxLab™ Forms	x	x	x	
EnviroLab™ Forms	x	x	x	

NB: The course options are subject to change. For up to date information on course availability, please contact us at euro.training.sid@thermofisher.com

Training: GC Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this course is to familiarize the new Thermo Scientific GC user with basic instrument operation including gas chromatography theory and optimization, routine maintenance, data acquisition, data processing and the general functionality of the Thermo Scientific ChromCard or ChromQuest software packages.

The course material can include:

- GC Theory & Optimization
- GC Routine Maintenance
- ChromCard/ChromQuest Software Overview
- GC Method and Sequence Set up

- Different types of calibration with ChromCard/ChromQuest
- Evaluation of Quantitative Data
- Reporting

Training: DSQ Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific DSQ user with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance, EI, CI and quadrupole theory, tuning, calibration, data acquisition, data processing and the general functionality of the Xcalibur software package.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
GC Theory & Optimization	EI Theory	Introduction to Qual Browser	Quantitative Processing
GC Maintenance	Quadrupole Theory	Introduction to NIST Library Browser	Introduction to Quan Browser
DSQ Hardware Routine Maintenance	Scan Functions of the DSQ	Qualitative Processing	Quantitative Reporting
	Xcalibur GC-MS Method Set up	Qualitative Reporting	Introduction to New Software Packages
	Xcalibur Sequence Set up	Introduction to CI	
		CI Optimization	

Gas Chromatography
GC-MS

Training: PolarisQ - ITQ Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific PolarisQ and ITQ user with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance, EI, CI and ion trap theory, tuning, MS^n data acquisition, data processing and the general functionality of the Xcalibur software package.

The course material includes:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
GC Theory & Optimization	EI Theory	Introduction to Qual Browser	Quantitative Processing
GC Maintenance	Ion Trap Theory	Introduction to NIST Library Browser	Introduction to Quan Browser
PolarisQ/ITQ Hardware Routine Maintenance	Scan Functions of the PolarisQ/ITQ	Qualitative Processing	Quantitative Reporting
	Xcalibur GC-MS Method Set up	Qualitative Reporting	
	Xcalibur Sequence Set up	Introduction to CI	
		CI Optimization	

Training: TSQ Quantum GC Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific TSQ Quantum GC user with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance, EI, CI and quadrupole theory, tuning, calibration, data acquisition, data processing and the general functionality of the Xcalibur software package.

The course material can include:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
GC Theory & Optimization for MS	EI Theory	Introduction to Qual Browser	Quantitative Processing
GC Maintenance	Quadrupole Theory	Introduction to NIST Library Browser	Introduction to Quan Browser
GC Quantum Hardware Routine Maintenance	Tuning and Calibration Procedures of the TSQ Quantum GC	Qualitative Processing	Quantitative Reporting
	Scan Functions of the TSQ Quantum GC	Qualitative Reporting	
	Xcalibur GC-MS Method Set up	Introduction to CI	
	Xcalibur Sequence Set up	CI Optimization	

Training: DFS Operator Training

Course Objective:

The aim of this course is to introduce and familiarize the new user of the Thermo Scientific DFS to the hardware maintenance, calibration and tuning, basic operations and optimization of the Thermo Scientific TriPlus Autosampler, Trace GC and DFS Mass Spectrometer. The course will also cover hardware functions, theory of operation, acquisition of data, review, processing and reporting of data using the Thermo Scientific Xcalibur, XReport, TargetQuan and Reporter software packages.

The course material can include:

DAY 1: 9.00 AM - 4:30 PM	DAY 2: 9.00 AM - 4:30 PM	DAY 3: 9.00 AM - 4:30 PM	DAY 4: 9.00 AM - 4.30 PM
GC Theory & Optimization for MS	EI Theory	Data Review	Quantitative Processing: TargetQuan
GC Maintenance	Hardware & Theory of Operation	Quantitative Processing in Xcalibur	Data Review 7 Processing: TargetQuan
GC Trace Routine Maintenance	Autotune & Calibration Functions	Introduction to Quan Browser	Introduction to Reporter
DFS Ion Volume Box Exchange	Scan Functions of DFS	Quantitative XReport	Round up & Questions
Basic calibration of DFS	MID Lock & Cali Mass	EPA 1613 Requirements	
	Xcalibur GC-MS Method Set up	Introduction to TargetQuan	
	Xcalibur Sequence Set up		
	Introduction to Qual Browser		

Training: Xcalibur Software

Course Objective:

This course is designed to familiarize the student with the operation of Xcalibur software for use in qualitative and quantitative analysis. Detailed presentations will be given on all Xcalibur modules together with hands on exercises in order to ensure understanding of all the processes. The students will become familiar with the subjects of method and sequence set-up, data manipulation, automated processing and report generation. By the end of the course they should be able to apply all software tools for their own purposes.

The course material can include:

- Xcalibur GC-MS Method Set up
- Xcalibur Sequence Set up
- Introduction to Qual Browser
- Introduction to Library Browser
- Qualitative Processing
- Qual Reporting
- Quantitative Processing: Introduction to Method Set up
- Quan Sequence Set up
- Introduction to Quan Browser
- Quan Reporting

Gas Chromatography
GC-MS

Training: QuanLab Forms Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this course is to familiarize the new user with the Thermo Scientific QuanLab Forms software package. QuanLab is a user friendly layered application that provides automated processing and smart reporting for quantitative analyses. Designed to ensure high-throughput quantitation, QuanLab Forms works together with Xcalibur software, the operating system for all Thermo Scientific mass spectrometer systems, via a workflow interface format, which streamlines sample acquisition, analysis, and reporting processes.

The training course will cover the procedures for successful acquisition setup, data reviewing, quantitative processing, qualitative processing and reporting using the QuanLab Forms software package.

Training: ToxLab Forms Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this course is to familiarize the new user with the Thermo Scientific ToxLab Forms software package. ToxLab Forms is designed specifically for the toxicology laboratory to easily meet data reviewing and reporting needs. It works together with Xcalibur software, the operating system for all Thermo Scientific mass spectrometer systems, via a workflow interface format, which streamlines sample acquisition, analysis, and reporting processes.

The training course will cover the procedures for successful acquisition setup, data reviewing, quantitative and qualitative processing and reporting using the ToxLab Forms software package.

Training: EnviroLab Forms Software

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

The aim of this course is to familiarize the new user with the Thermo Scientific EnviroLab Forms software package. EnviroLab Forms is a layered application that provides easy to use automated environmental reports to meet analytical reporting requirements. It works together with Xcalibur software, the operating system for all Thermo Scientific mass spectrometer systems, via a workflow interface format, which streamlines sample acquisition, analysis, and reporting processes.

The training course will cover the procedures for successful acquisition setup, data reviewing, quantitative and qualitative processing and reporting using the EnviroLab Forms software package.

Trace Elemental Analysis
AA & ICP-OES

Atomic Absorption Spectroscopy

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
Flame AA Operations	x	x
Furnace AA Operations	x	x

Inductively Coupled Plasma Spectroscopy

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
ICP-OES Operations	x	x

NB: The course options are subject to change. For up to date information on course availability, please contact us at euro.training.sid@thermofisher.com

Trace Elemental Analysis
AA

Training: Flame AA Operations

Course Objective:

This course is designed for the Thermo Scientific AA Operator and covers all the essential topics related to flame optimization, method development and efficient operation of the instrument.

The course material includes:

Theory of Atomic Absorption

- Absorption and Emission Theory

- Hardware: Set up, Use and Optimization

- Correction System for Non-Specific Absorptions

Sample Preparation and Analytical Validation

- Sample Solubilization

- Quality Control Tests

Application of Atomic Absorption in Flame Mode

- Influence of Experimental Parameters

- Absorption and Emission Analysis

- Non-Specific Absorption and Chemical Interferences

- Maintenance

Training: Furnace AA Operations

Course Objective:

This course is designed for the Thermo Scientific AA Operator and covers all the essential topics related to optimization of a furnace AA system, method development and efficient operation of the instrument.

The course material includes:

DAY 1: 9.30 AM - 5.00 PM	DAY 2: 9.30 AM - 5.00 PM
Theory of Absorption	Development of an Analytical Method (continued)
Hardware : Set Up, Use and Optimization	Non-Specific Absorption and Matrix Modifiers
Correction System for Non-Specific Absorptions	Maintenance
Influence of Experimental Parameters	Sample Solubilization
Development of an Analytical Method	Quality Control Tests

Training: ICP-OES Operations

Course Objective:

The aim of this is to improve the theoretical knowledge and practical skills of the Thermo Scientific ICP-OES user. The course will cover atomic spectroscopy theory, plasma related topics, instrument hardware, tuning and method set-up, functionalities of the software package, basic maintenance and troubleshooting.

The course material includes:

DAY 1: 14:00 PM – 17:00 PM	DAY 2: 9.30 AM – 17:00 PM	DAY 3: 9.30 AM – 17:00 PM	DAY 4: 9.30 AM – 11:45 AM
Atomic Spectroscopy Theory	Plasma Optimization	Practical Session: Background Correction InterElement Correction Scans and Subarrays Examination	ICP-OES Instrumentation: Generator, Optics, Electronics & Hardware
Plasma Concepts	Practical Session: Nebulization Optimization, Conditions Selection Methodology Data Export to Excel	iTEVA, TEVA and ThermoSPEC Software Functionalities	Routine Maintenance
	Various Types of ICP Interferences: Chemical, Physical and Spectral	Practical Session: AutoSampler Set-Up Semi-Quantitation, Standard Addition Method, Detection Limits Report Generation and Use of Publisher Free Labtime	Troubleshooting
	Workflow Recommendation		

Inorganic Mass Spectrometry
ICP-MS, MC-ICP-MS, GDMS, TIMS & IRMS

ICP-MS

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
XSERIES Operations	x	x
XSERIES 2 Operations (Factory Training)	x	x
Element Operations	x	x

Multi-Collector ICP-MS

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
Neptune/Neptune *Plus* Operations	x	x

Glow Discharge MS

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
Element GD Operations	x	x

Thermal Ionization MS

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
Triton/Triton *Plus* Operations	x	x

Isotope Ratio MS

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
GC – EA Operations (GC IsoLink, ConFlo III/IV, Elemental Analyzer and TC/EA Peripherals)	x	x
GC – LC Operations (GC IsoLink and LC IsoLink)	x	x
GB - EA Operations (GasBench II, ConFlo III/IV, Elemental Analyzer and TC/EA Peripherals)	x	x
Dual Inlet Operations (H-Device, Kiel Carbonate Device, Microvolume)	x	x
GC Operations (GC/C III Interface and Peripherals)	x	x
GB-GC Operations (GasBench II, GC IsoLink, ConFlo III/IV and Peripherals)	x	x

NB: The course options are subject to change. For up to date information on course availability, please contact us at training.bremen@thermo.com

Training: XSERIES Operations

REGISTER or more information available at: euro.training.sid@thermofisher.com

Course Objective:

This course covers the fundamentals of the Thermo Scientific XSERIES systems operation and maintenance with a mixture of lectures and practical sessions. Topics include atomic spectroscopy theory, plasma description, hardware, tuning and method set-up, functionalities of the software package, basic maintenance and troubleshooting.

The course material can include:

DAY 1: 9.30 AM – 17:00 PM	DAY 2: 9.30 AM – 17:00 PM	DAY 3: 9.30 AM – 17:00 PM
Quadrupole ICP-MS Fundamentals	Analytical Issues: Sample Preparation, Matrix Effects	Interferences and Solutions
ICP-MS Analysis and Method Development	Calibration	The Collision/Reactions Cell Technology, CTT
	Data Management and Processing	Multi-Elements and Multi-Modes Analysis
	Qualification and Performances Report	Maintenance
	Maintenance	

Training: XSERIES 2 Operations (Factory Training)

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

This basic 3.5 day training course on inductively coupled plasma mass spectrometry (ICP-MS) is designed for customers who have purchased the Thermo Scientific XSERIES 2. Please note that all hands-on training will be made using the XSERIES 2 instruments in the Bremen factory. The general objective of this training course is to familiarize new customers with instrument features as well as routine operation and maintenance. Topics covered will include:

- Introduction to ICP-MS
- Principles of operation of ICP-MS
- Evaluation of different interface designs and the use of collision cell technology (CCT) to address specific
- System optimization, instrument calibration routines
- Data acquisition (using a variety of calibration techniques), QA/QC and interpretation
- Routine maintenance

Selected additional topics, depending on the customer's installed equipment and its availability in the application laboratory, include cold plasma analysis, isotope ratio analysis and the use of additional sample introduction equipment (for example laser ablation, chromatography and desolvating or ultrasonic nebulizers) in conjunction with the XSERIES 2.

Inorganic Mass Spectrometry
ICP-MS, MC-ICP-MS, GDMS, TIMS

Training: Element Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

The inductively coupled plasma mass spectrometer training courses are designed for customers who have purchased either the Thermo Scientific ELEMENT2, ELEMENT, or ELEMENT XR. Please note that all hands-on training will be made using the ELEMENT2/XR. The general objective of this course is to familiarize the customer with the instrument features, operation and maintenance. Topics that will be covered include system optimization, mass calibration, data acquisition (using a variety of calibration techniques) and interpretation. Selected additional topics, depending on the customer's installed equipment and its availability in the application laboratory, include cold plasma analysis, isotope ratio analysis and the use of additional sample introduction equipment (for example laser ablation and desolvating or ultrasonic nebulizers) in conjunction with the ELEMENT2/XR.

Training: Neptune/Neptune *Plus* Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

The Multi-Collector ICP-MS training courses are designed for customers who have purchased the Thermo Scientific NEPTUNE or NEPTUNE Plus systems. The general objective of these training courses is to familiarize the new users with the instrument features, basic instrument operation, checks and maintenance, collector system methods as well as software, and troubleshooting.

Training: ELEMENT GD Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

The glow discharge mass spectrometer instrument training courses are designed for customers who have purchased the Thermo Scientific ELEMENT GD. The general objective of this training course is to familiarize the customer with the instrument features, operation and maintenance. Topics that will be covered include system optimization, mass calibration, and data acquisition. Selected additional topics will be trained, depending on the customer's installed equipment and its availability in the application laboratory in conjunction with the ELEMENT GD.

Training: Triton/Triton *Plus* Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

The TRITON operator training courses are designed for customers who have purchased the Thermo Scientific TRITON or TRITON Plus. The general objective of these training courses is to familiarize with the instrument features, basic instrument operations, check and maintenance, collector system, methods as well as software, and trouble shooting.

Inorganic Mass Spectrometry
IRMS

Training: GC-EA Operations

Course Objective:

Covering: GC IsoLink and Peripherals, ConFlo III/IV, Elemental Analyzer and TC/EA Peripherals

The general objective of this training course is to familiarize the operator with Thermo Scientific DELTA V Plus and DELTA V Advantage instrument features, vacuum system, ion source setting, basic instrument operations, instrument check and maintenance basics, software and trouble shooting. It intends to give you the best understanding for the interfaces and sample preparation units GC IsoLink, ConFlo III/IV, EA Elemental Analyzer for N, C, S isotope ratio determination, and TC/EA for H, O isotope ratio determination from Thermo Scientific.

Training: GC-LC Operations

Course Objective:

Covering: GC IsoLink and Peripherals, LC IsoLink

The general objective of this training course is to familiarize the operator with Thermo Scientific DELTA V Plus and DELTA V Advantage instrument features, vacuum system, ion source setting, basic instrument operations, instrument check and maintenance basics, software and trouble shooting. It intends to give you the best understanding for the interfaces and sample preparation units Thermo Scientific LC IsoLink and GC IsoLink.

Training: GB-EA Operations

Course Objective:

Covering: GasBench II, ConFlo III/IV Interface, Elemental Analyzer and TC/EA Peripherals

The general objective of this course is to familiarize the operator with the Thermo Scientific DELTA V Plus and DELTA V Advantage instrument features, vacuum system, ion source setting, basic instrument operations, instrument check and maintenance basics, software and troubleshooting. It intends to give you the best understanding for the interfaces and sample preparation units Thermo Scientific GasBench II and ConFlo III/IV, Elemental Analyzer EA for N, C, S isotope ratio determination, TC/EA for H, O isotope ration determination.

Inorganic Mass Spectrometry
IRMS

Training: Dual Inlet Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

Covering: Dual Inlet and Peripherals

The general objective of this course is to familiarize the operator with the Thermo Scientific DELTA V Plus and DELTA V Advantage instrument features, vacuum system, ion source setting, basic instrument operations, instrument check and maintenance basics, software and trouble shooting. It intends to give you the best understanding for Dual Inlet operation with peripherals including Multiport and Microvolume (H/Device, Kiel IV Carbonate Device, HDO II optional).

Training: GB-GC Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

Covering: GasBench II, GC IsoLink, ConFlo III/IV and Peripherals

The general objective of this course is to familiarize the operator with Thermo Scientific DELTA V Plus and DELTA V Advantage instrument features, vacuum system, ion source setting, basic instrument operations, instrument check and maintenance basics, software and troubleshooting. It intends to give you the best understanding for the interfaces and sample preparation units Thermo Scientific GC IsoLink, ConFlo III/IV and Peripherals and GasBench II.

Training: GC Operations

REGISTER or more information available at: training.bremen@thermo.com

Course Objective:

Covering: GC/C III Interface and Peripherals

The general objective of this is to familiarize the operator with Thermo Scientific DELTA V Plus and DELTA V Advantage instrument features, vacuum system, ion source setting, basic instrument operations, instrument check and maintenance basics, software and trouble shooting. It intends to give you the best understanding for the interfaces and sample preparation units GCCIII, GC-C/TC Interfaces and Peripherals.

Bulk Elemental Analysis

X-Ray Fluorescence Spectrometry

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
ARL QUANT'X EDXRF Operations	x	x
ARL UniQuant and QuantAS Options under WinXRF or OXSAS XRF software	x	x
X-ray Hardware and Maintenance	x	x

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
ARL WinXRF or OXSAS XRF Software Operations	x	x
ARL WinXRF Software Modules	x	x

Optical Emission Spectrometry

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
OES Hardware & Maintenance (ARL 3460, ARL 4460)	x	x

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
ARL WinOE or OXSAS OES Software	x	x
ARL WinOE or OXSAS OES Software Modules	x	x
ARL SparkDAT Software under WinOE or OXSAS OES Software (ARL 4460)	x	x

Automation Systems

THERMO SCIENTIFIC INSTRUMENT OPERATOR COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
OES Automation Hardware & Maintenance (ARL 3460, ARL 4460 with ARL SMS-2000 automation system)	x	x
XRF Automation Hardware & Maintenance (ARL 9900 with ARL SMS-2000 or SMS-XY automation system)	x	x

THERMO SCIENTIFIC SOFTWARE COURSES	AVAILABLE AT:	
	Thermo Fisher Scientific Premises	Customer Site
OES and XRF Automation Software	x	x

NB: The course options are subject to change. For up to date information on course availability, please contact us at training.analyze.ch@thermofisher.com

Bulk Elemental Analysis
XRF

Training: ARL QUANT'X EDXRF Operations

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed for both new and experienced Thermo Scientific ARL QUANT'X EDXRF system operators. The course emphasizes the theory of energy dispersive X-ray fluorescence for bulk sample analysis and the operation of Thermo Scientific WinTrace software by covering the following topics:

- XRF Theory of Measurement
- Excitation Conditions
- Sample Preparation
- Spectral Acquisition
- Optimizing Analysis Setup

- Qualitative and Quantitative Analysis
- Comparative Analysis
- Method Preparation
- Reference Acquisition
- Instrument Maintenance Basics

Training: ARL UniQuant and QuantAS Options under WinXRF or OXSAS XRF software

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course will help users understand how to run and analyze samples and the philosophy of semi-quantitative analysis. The course provides an overview of principles and operation of the Thermo Scientific UniQuant program, principles of UniQuant calibration and applications, matrix specific adjustments, results handling and recalibration. The course continues with an overview of the principles and operation of Thermo Scientific QuantAS, principles of QuantAS calibration, applications and recalibration.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and Thermo Scientific WinXRF or OXSAS XRF software packages.

Training: X-Ray Hardware and Maintenance

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed to familiarize users of all existing Thermo Scientific X-ray spectrometers with the structure of the instrument. The user will learn maintenance and diagnostic techniques and how to establish and follow a maintenance schedule.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinXRF or OXSAS XRF software.

Training: ARL WinXRF or OXSAS XRF Software Operations

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

Each designated software course will teach operators the principles and techniques of their respective application software:

- WinXRF for use with the Thermo Scientific ARL ADVANT'X Series, ARL 9800, ARL OPTIM'X and ARL 9900 Series

 or

- OXSAS XRF for use with the Thermo Scientific ARL ADVANT'X Series, ARL OPTIM'X, ARL 9900 Series and ARL 9900 X-ray WorkStation™

Users will learn the principles of X-ray fluorescence analyses, structure and overview of Thermo Scientific WinXRF or OXSAS XRF software, basics of system set-up, diagnostic tools, instrument calibration, results exploitation, data security and practical work on PC.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinXRF or OXSAS XRF software.

Training: ARL WinXRF Software Modules

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed for users of Thermo Scientific ARL ADVANT'X Series, ARL 9800, ARL OPTIM'X and ARL 9900 Series providing instruction to help students understand the WinXRF application software. The ARL WinXRF software options bundle:

- SPC (1.5 days)
- ARL Net (1.5 days)
- NBSGSC (1 day)
- Charge correction, Translate, Metaverage, Automatic Program Choice (1 day; optional course segment taught upon request.)

SPC Module covers loading and starting of SPC Light, interpretation of control charts, setting up of WinXRF, structure of the SPC Light, setting up of WinXRF for production monitoring by SPC Light, structure of the SPC Light database, management of SPC data files and printing of SPC reports.

ARL Net Module is a versatile package to transmit analysis results via LAN Local Area Network, using a variety of procedures, protocols and formats to best meet your needs.

NBSGSC Module sessions include set-up and use NBSGSC (Theoretical Alphas).

Charge Correction, Translate, Metaverage, Automatic Program Choice Module covers the Charge Correction – an integrated option of WinXRF that calculates the weight of materials to be added to a furnace charge in order to bring out of specification materials within limits. Translate is a WinXRF language management philosophy option. The user will know how to set up a new language and to translate the messages. The student will also learn to set up and use the Average of Analysis Results (Metaverage).

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinXRF software.

Bulk Elemental Analysis
OES

Training: OES Hardware & Maintenance (ARL 3460, ARL 4460)

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed to familiarize users of all existing Thermo Scientific OES spectrometers with the structure of the instrument. The user will learn maintenance and diagnostic techniques and how to establish and follow a maintenance schedule.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinOE or OXSAS OES software.

Training: ARL WinOE or OXSAS OES Software

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course teaches the principles and techniques of WinOE or OXSAS OES software for the Thermo Scientific ARL 3460 and ARL 4460. The course covers the principles of optical emission analyses, structure and overview of the WinOE or OXSAS OES software, system set-up, diagnostic tools, instrument calibration, results exploitation, data security and practical work on the PC.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinOE or OXSAS OES software.

Training: ARL WinOE or OXSAS OES Software Modules

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

Designed for users of the Thermo Scientific ARL 3460 and ARL 4460, this course will cover WinOE software applications.
The ARL WinOE or OXSAS OES software options bundle:

- SPC (1.5 days)
- ARL Net (1.5 days)
- Charge correction, Translate, Metaverage, Automatic Program Choice (1 day; optional course segment taught upon request.)

SPC Module covers loading and starting of SPC Light, interpretation of control charts, setting-up of WinOE, structure of the SPC Light, set up of WinOE for production monitoring by SPC Light, structure of the SPC Light database, management of SPC data files and printing of SPC reports.

ARL Net Module is a versatile package to transmit analysis results via LAN Local Area Network, using a variety of procedures, protocols and formats to best meet your needs.

Charge Correction, Translate, Metaverage, Automatic Program Choice Module covers Charge Correction – an integrated option of WinOE that calculates the weight of materials to be added to a furnace charge in order to bring out of specification material within limits. The user will also learn to set up and use the Average of Analysis Results (Metaverage).

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinOE or OXSAS OES software.

Training: ARL SparkDAT Software under WinOE or OXSAS OES Software (ARL 4460)

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed to teach users the principles and techniques of the Thermo Scientific SparkDAT software for the Thermo Scientific ARL 4460 only. The course provides a general overview of SparkDAT system with topics that include:

• SparkDAT software and sparks view

• Installation and configuration of algorithms

• Standard applications and creation of SparkDAT programs that incorporate algorithms for fast inclusions characterization

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinOE or OXSAS OES software.

Bulk Elemental Analysis

Automation Systems

Training: OES Automation Hardware & Maintenance

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed to familiarize users of the Thermo Scientific ARL 3460 or ARL 4460 coupled to a Thermo Scientific ARL SMS-2000 automation system with the structure of the system. The user will learn maintenance and diagnostic techniques and how to establish and manage a maintenance schedule. Other topics include: philosophy, overview of the periodic maintenance tables concerning the cleaning devices, the analysis table and its accessories, the SMS rack, the pneumatic system and the robot arm, general troubleshooting and diagnostics.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinOE software or OXSAS OES software.

Training: XRF Automation Hardware & Maintenance

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed to familiarize users of Thermo Scientific ARL 9900 Series coupled to an ARL SMS-2000 or SMS-XY automation system with the structure of the system. The user will learn maintenance and diagnostic techniques and how to establish and follow a maintenance schedule. Topics include: philosophy, overview of the periodic maintenance tables concerning the SMS rack, the pneumatic system and the robot arm, general troubleshooting and diagnostic.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems and WinXRF or OXSAS XRF software.

Training: OES and XRF Automation Software

REGISTER or more information available at: training.analyze.ch@thermo.com

Course Objective:

This course is designed for users of Thermo Scientific ARL SMS-2000 and ARL SMS-3000 automation systems. The user will learn the principles and techniques of the application software for these OES or XRF automation systems. The course provides instructions regarding the software structures of the automation system, menu overview of Manager Level, configuration of menus and accounts, system operation and working parameters.
The course also covers the details of the registration scheme, registration and running of production samples, system monitoring, events and alarms related to the automatic mode.

Prerequisites: Practical experience of at least three months following the installation of the instrument and general knowledge of Windows® operating systems:
- WinOE or OXSAS OES software
  or
- WinXRF or OXSAS XRF software

In addition to the regular Thermo Scientific training courses, the European Training Institute also offers training at the customer laboratory, customized specifically towards the customer's needs. Bespoke courses allow the customer to make the most of their training experience and share the instructor's knowledge amongst many course participants at a fixed cost. The content and duration of the training course as well as the training date are organized and agreed by direct communication between the customer and the instructor to enable full flexibility and complete understanding of the training request. During the on-site training, the customer has the opportunity to practice using their own equipment and explore the capabilities of their instrumentation using the guidance and recommendations of an expert.

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London Address:

King's College London
Franklin-Wilkins Building
Stamford Street
London
SE1 9NH
U.K.

Bremen Address:

Thermo Fisher Scientific (Bremen) GmbH
Hanna-Kunath-Strasse 11
28199 Bremen
Germany

Tel: +49 (0)421 54930
Fax: +49 (0)421 5493396

Hemel Hempstead Address:

Thermo Fisher Scientific
Stafford House
Boundary Way
Hemel Hempstead
HP2 7GE
U.K.

Tel: +44 (0)1442 233555
Fax: +44 (0)1442 233667

Dreieich Address:

Thermo Fisher Scientific GmbH
Im Steingrund 4-6
63303 Dreieich
Germany

Tel: +49 (0)6103 4080
Fax: +49 (0)6103 4081640

Paris Address:

Thermo Fisher Scientific
16, Avenue du Québec - Silic 765
91963 - Courtaboeuf Cédex
France

Tel: + 33 (0)1 60924822
Fax: + 33 (0)1 60924819

Basel Address:

Thermo Fisher Scientific (Schweiz) AG
Neuhofstrasse 11
CH-4153 Reinach
Switzerland

Tel: +41 (0)61 7167700
Fax: +41 (0)61 7167701

Ecublens Address:

Thermo Fisher Scientific (Ecublens) SARL
En Vallaire Ouest C
Case Postale
CH-1024 Ecublens
Switzerland

Tel: +41 (0)21 6947111
Fax: +41 (0)21 6947112

Pavia Address:

Centro Grandi Strumenti, Lab.MS
Universita Degli Studi di Pavia
Via Bassi, 21
27100
Pavia
Italy

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