

thermoscientific

Thermo Scientific Training Courses



The key to your laboratory's success

2018 Training Programme UK and Ireland

ThermoFisher
SCIENTIFIC

Invest in Yourself

People are the most valuable assets in any lab. We offer comprehensive, professional training and certification through a complete course portfolio that can help you achieve the most from your instrumentation and results.

Our ultimate goal is to provide you with a total solution for your analytical needs, and so we offer a wide range of training courses on:

- **Instrument operation - hardware and software**
- **Instrument maintenance**
- **Software and applications**

Optimal classroom settings and world-class instructors will enhance your learning experience and allow you to gain greater productivity. As experts in their disciplines, our experienced specialists can provide a variety of education solutions to ensure that students are able to get the most value from their investment and achieve relative practical and theoretical knowledge. A range of venues are available for your convenience: on-site or at one of our Centers of Excellence.

We look forward to discussing your training needs and working with you to ensure your success with our products.

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Life Sciences Mass Spectrometry

Invest in Yourself. Whether you would like to enhance your learning experience or gain greater productivity, the Life Sciences Mass Spectrometry courses are designed to ensure each student has time to address their specific topics of interest. The courses offer both practical and theoretical training and are taught by experienced and certified instructors.



Life Sciences Mass Spectrometry

Proteomics

Training: Ion Trap and LTQ Orbitrap Biotech Operations

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™ and ion trap mass spectrometers 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™ and Proteome Discoverer™ software programs. When ETD training is requested, the following topics can be incorporated to the course timetable: maintenance of ETD source, optimization, tuning and calibration of the ETD components, experimental set-up, ETD data processing.

The course material includes:

- Ion Trap and Orbitrap Theory
- Tuning and Calibration
- Hands-on ESI and NSI MS
- Data Dependent Method Design
- Post-Translational Modification Methods
- Parallel Detection Methods
- Accurate Mass Methods
- Xcalibur Software for Qualitative Methods
- Proteome Discoverer Software
- Basic Thermo Scientific LTQ Maintenance

This course is offered at customer site only

Training: Q Exactive Biotech Operations

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™ Q Exactive™ 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 the 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, and SIEVE software programs.

The course material includes:

- Quadrupole and Orbitrap Theory
- Quadrupole and Orbitrap Hardware
- Instrument Tuning and Calibration
- Basic nano-flow LC Method Development
- Data Dependent and Multiplexing Method Design
- Data Independent Acquisition (DIA)
- Parallel Reaction Monitoring (PRM)
- Proteome Discoverer Software
- Processing of Post Translation Modification Methods

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™ mass spectrometer 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 TraceFinder software package. The training content can be customized according to the customer's specific needs.

The course material includes:

- TSQ Hardware and Theory
- Tuning and Calibration
- Hands-on ESI and NSI MS
- Maintenance
- Parameters necessary for Good Quantitation
- TraceFinder Software for Quantitative Methods
- Instrument Method Development
- Data Processing

This course is offered at customer site only

Training: Fusion Biotech Operations

Course Objective:

This course is designed for users who have previous LC-MS experience and are interested in protein and peptide analysis. It is specific to the Thermo Scientific™ Orbitrap Fusion™ and Fusion Lumos Tribrid Mass Spectrometers 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, and 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 and Proteome Discoverer software programs. When ETD training is requested, the following topics can be incorporated to the course timetable: maintenance of ETD source, optimization, tuning and calibration of the ETD components, experimental set-up, ETD data processing.

The course material includes:

- Dual Pressure Linear Ion Trap, Quadrupole and Orbitrap Theory
- Basic Tune and Calibration
- Hands-on ESI and NSI MS
- Data Dependent Method Design
- Post-Translational Modification Methods
- Data Independent Method Design
- Intact Protein and Top-Down
- Accurate Mass Methods
- Proteome Discoverer Software
- Basic Maintenance

Life Sciences Mass Spectrometry

Proteomics

Training: Proteome Discoverer Software

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 database manipulation, database search parameters as well as the interpretation of results. By the end of the course they should be able to apply all software tools for their own purposes.

Training: BioPharma Finder Software - Peptide Mass Fingerprint Analysis

Course Objective:

BioPharma Finder is the new Thermo Scientific™ software package used for intact mass and peptide mass fingerprint analysis. For biotherapeutic proteins to be effective, they must be produced in biologically active forms with proper folding and post-translation modifications (PTMs). BioPharma Finder software makes it easy to define the target protein sequence, select a proteolytic digest enzyme, and assign known and potential post-translational modifications to search. Protein sequences can be imported from FASTA and text files, or sequences can be pasted into a text box.

The aim of this training course is to provide new users with the ability to use BioPharma Finder software for peptide mass fingerprint analysis to its full potential. The user will be able to create automated workflows necessary for an in-depth characterization of biotherapeutic proteins (glycopeptides identification, disulfide bond mapping, quantification of PTM's including oxidation, deamidation, phosphorylation). The users will also learn how to perform error tolerant and amino acid substitution searches as well as processing peptide mapping raw data.

Life Sciences Mass Spectrometry

Proteomics

Training: ProSightPC/ProSightPD Software

Course Objective:

The aim of this training course is to provide new users with the ability to use Thermo Scientific™ ProSightPC software to its full potential. ProSightPC is an all round tool for identification and characterization of both intact proteins and peptides. It enables high-throughput processing of all accurate-mass MS/MS data, whether from top-down, middle-down or bottom-up experiments including the characterization of proteins with known PTMs. Detailed presentations will be given on all the options available with hands on exercises in order to ensure understanding of all the processes. The course will cover all the steps from software setup to data reporting, including the use of the multiple search modes available to determine the exact protein sequence including modifications and alternative splicing.

Training: BioPharma Finder Software - Intact Mass Analysis

Course Objective:

Thermo Scientific™ BioPharma Finder™ software package is used for intact mass and peptide mass fingerprint analysis. The aim of this training course is to provide new users with the ability to use this new software package to its full potential. BioPharma Finder significantly improves the identification and characterization of intact proteins from mass spectrometric data. It is the only intact mass analysis software available today that takes full advantage of the ultra-high-resolution, accurate-mass data produced by Orbitrap-based mass spectrometers. BioPharma Finder is also capable of processing ion trap raw data. Detailed presentations will be given on all the options available with hands on exercises in order to ensure understanding of all the processes. The course will cover all the steps necessary to the use of the two built-in algorithms (Xtract and ReSpect), data processing options, deconvoluted data handling and reporting. Guidelines on intact protein analysis for Thermo Scientific mass spectrometers will also be provided.

Life Sciences Mass Spectrometry

Small Molecules

Training: Fusion Operations

Course Objective:

The Fusion Operations course is designed for users that have previous LC-MS experience and would like to familiarize themselves with the Orbitrap Fusion mass spectrometer. The course will cover API and ion trap theory, tuning, calibration, data collection, general functionality of the Xcalibur software and main workflows for additional processing softwares. The emphasis of the training is on small molecule analysis, accurate mass applications and data processing (TraceFinder and Compound Discoverer).

The course material includes:

- Dual Pressure Linear Ion Trap, Quadrupole and Orbitrap Theory
- Basic Tune and Calibration
- Compound Tuning for MS and MS/MS Purposes
- Data Dependent Method Design
- Introduction to TraceFinder, Compound Discoverer and Freestyle
- Accurate Mass Methods
- Parallel Detection Methods
- Introduction to Elemental Composition and 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 for both qualitative and quantitative purposes. 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:

- Ion Trap Theory
- Tuning and Calibration
- Hands-on APCI and ESI MS
- Instrument Method Development for LC/MS
- Multi-Stage MS Method Building
- Quantitative Analysis
- Xcalibur Software
- Basic Maintenance

This course is offered at customer site only

Life Sciences Mass Spectrometry

Small Molecules

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 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 includes:

- LTQ 2D Ion Trap and Orbitrap Theory (Single and Dual Traps)
- Basic Tune and Calibration
- Compound Tuning for MS and MS/MS Purposes
- Instrument Method Development for LC/FTMS
- Introduction to Qual Browser/Freestyle
- Accurate Mass Methods
- Data Dependent Analysis
- Introduction to Elemental Composition and Structure Elucidation

This course is offered at customer site only

Training: Metabolite Identification

Course Objective:

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

The course material includes:

- MS Theory
- Basic Tune and Calibration
- Compound Tuning for MS and MS/MS purposes
- Method Development
- Data Dependent Analysis and Accurate Mass Methods
- Introduction to Freestyle
- Identification of Metabolites using Compound Discoverer
- Structure Elucidation using Compound Discoverer

This course is offered at customer site only

Life Sciences Mass Spectrometry

Small Molecules

Training: Structure Elucidation of Unknowns

Course Objective:

The aim of this training course is to familiarize new Thermo Scientific MS 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 MS theory, tuning, calibration, data collection and general functionality of the Xcalibur software.

The course material includes:

- 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 Freestyle
- Component Detection using Compound Discoverer and *m/z* Cloud
- Creation and Interrogation of Libraries in Compound Discoverer and *m/z* Cloud
- Spectra Interpretation using Compound Discoverer and *m/z* Cloud

This course is offered at customer site only

Life Sciences Mass Spectrometry

Small Molecules

Training: Compound Discoverer Software

Course Objective:

The aim of this training course is to provide new users with the ability to use the Thermo Scientific™ Compound Discoverer™ software to its full potential.

Compound Discoverer software ensures confident compound identification and structural elucidation in applications as diverse as metabolism, unknown metabolomics, pharmaceutical metabolism, impurity analysis, E&L, forensic toxicology and environmental research. The software helps researchers plan how data will be collected, organized, stored and reported with the final result in mind. Its node-assembled processing workflows, advanced algorithms, and study-oriented data storage allow users to quickly process and assemble data collected from multiple samples into a unified report.

The training course will cover all the aspects of the software including:

- Untargeted compound detection with isotope and adduct grouping
- Database searching using mzCloud™, Chemspider, KEGG or own databases
- Expected compound search including dealkylation and dearylation predictions and transformation products
- Fragment ion search (FISh) and structure annotations
- Compare with control experiments
- Background handling
- Reporting

Life Sciences Mass Spectrometry

Small Molecules

Training: TSQ Operations

Course Objective:

The aim of this training course is to familiarize the new TSQ user with instrument operation including atmospheric pressure ionization, quadrupole principles, compound tuning, instrument calibration, data collection, maintenance and general functionality of Xcalibur and Thermo Scientific™ TraceFinder™ software packages. The focus of this training course is small molecule quantitation and the different approaches enabled by hardware and software in this field will be explored. Customers interested in the quantitation of peptides and proteins should choose the TSQ Biotech Operations course instead.

The course material includes:

- TSQ Hardware Components
 - TSQ Scan Modes
 - TSQ Instrument Control
 - Quantitation using TraceFinder
 - Reporting
 - User Maintenance
-

Training: Exactive Operations

Course Objective:

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

The course material includes:

- Overview of Theory and Practical Operation of the Thermo Scientific Orbitrap Mass Analyzer
- System Tuning and Calibration Procedures
- Preventative Maintenance and Troubleshooting Procedures
- Method and Sequence Setup
- Data Processing and Reporting

Life Sciences Mass Spectrometry

Small Molecules

Training: Q Exactive Operations

Course Objective:

The aim of this training course is to familiarise the new Q Exactive user with Orbitrap technology. The training agenda covers API, Quadrupole and Orbitrap theory, tuning, calibration, data collection and general functionality of the Thermo Scientific Xcalibur and TraceFinder software packages. The emphasis of the training course is on small molecule analysis both from a qualitative and quantitative point of view, on accurate mass applications and data processing.

The course material includes:

- API, Quadrupole and Orbitrap Theory
- Q Exactive Hardware Components
- Tuning and Calibration
- Quantitative Set Up and Processing
- Qualitative Set Up and Processing
- Non Targeted/Unknown Screening
- Targeted Screening
- Troubleshooting and Maintenance

Training: Automated Online Sample Preparation Using TurboFlow Technology

Course Objective:

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

The course material includes:

- Theory of Turbulent Flow Chromatography
- Hardware Set Up: Autosampler, Injector Ports, Loading and Eluting Pumps, Multiple Column Module (MCM)
- Acquisition and processing 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*

This course is offered at customer site only

Life Sciences Mass Spectrometry

Small Molecules

Training: EQuan

Course Objective:

The aim of this course is to familiarize the new user with the Thermo Scientific™ EQuan large volume injection technique. 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. This training module can be combined with any of the instrument Operations courses on offer.

This course is offered at customer site only

Training: TraceFinder Software

Course Objective:

Thermo Scientific™ TraceFinder™ is a software package with built-in workflows that have been developed to assist in routine analysis of small molecules applications. The aim of this training course is to enable the users to implement fully automated acquisition and processing workflows. Detailed presentations will be given on all TraceFinder functionalities together with hands on exercises in order to ensure understanding of all the processes. The software setup, user selection and all the steps necessary for data collection and processing, data analysis and report generation will be covered. This training module can be combined with any of the instrument Operations courses on offer.

Training: LipidSearch

Course Objective:

Thermo Scientific LipidSearch software provides automatic identification and relative quantification of cellular lipid molecular species from large amounts of mass spectrometric data obtained in nano-infusion or LC-MS experiments. During the course you will learn how to use the software for different analysis conditions. The student will use practical examples to explore the lipid database, the ID module and how to perform relative quantitation. The various output options will be discussed. By the end of the student will be able to use LipidSearch to successfully analyse their lipidomics data.

Life Sciences Mass Spectrometry

Small Molecules

Training: ISQ EC Operations

Course Objective:

The aim of this training course is to familiarize the new Thermo Scientific™ ISQ™ EC mass spectrometer user with instrument operation including electrospray ionization, quadrupole principles, compound tuning, instrument calibration, data collection, maintenance and general functionality of the Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System (CDS) software package. The focus of this course is small molecule analysis for both qualitative and quantitative purposes.

The course material includes:

- SQ EC Hardware Components
- Maintenance
- Tuning and Mass Calibration
- Compound Optimization and Method Development
- Quantitative SIM Analysis by Electrospray
- Quantitation using Chromeleon
- Fragmentation
- Qualitative Processing

Training Schedule 2018

COURSE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Q Exactive Operations		6-8				5-7					6-8	
TSQ Operations	30-1								4-6			
Fusion Biotech Operations				24-27			24-27					
Q Exactive Biotech Operations					1-4					9-12		
Fusion Operations			6-8							2-4		
ISQ EC Operations					22-23						20-21	



Hemel Hempstead, tuition in English.

Chromatography

Real-World Knowledge. For experienced and new users to our extensive line of Chromatography instruments, we offer both practical and theoretical training courses taught by experienced and certified instructors. Course sizes are kept to a minimum to ensure each student has access to instruments, as well as time to address their specific topics of interest.



Chromatography

GC

Training: Fundamentals of GC

Course Objective:

For the less experienced chromatographer or those wishing to update their skills, this course covers the fundamentally important concepts in modern GC analysis.

Basics of the chromatographic process, sample preparation, inlet systems, column and detector selection are important topics covered to give the participant a thorough grounding in the technique. Instrument hardware is also covered with basic troubleshooting and maintenance tips as well as an introduction to chromatographic optimization.

The training course will cover:

- Basics of the Chromatography Process
 - Retention mechanisms in GC
 - Temperature/retention relationships
 - Column theory
 - Stationary phase chemistries
- Sample Preparation Protocols
 - Principles
 - Matrix elimination
 - Solvent considerations
 - Solvent and Solid Phase Extraction
- Sample Introduction
 - Operating principles
 - Typical operating conditions
 - Optimisation
 - Split / splitless
 - Cool on-column
 - Headspace (by request)
- Columns and Temperature programming
 - Choosing the right phase
 - Column geometries explained
 - Phase types
 - Temperature effect
- Detectors
 - Choosing the right detector
 - Operating principles and Optimisation
 - Typical operating conditions
 - FID / ECD / GC-MS
- Measuring & Optimizing Chromatographic Parameters
 - Efficiency
 - Capacity factor
 - Selectivity
 - Resolution
 - Interdependence via the resolution equation

Chromatography

GC

Training: Trace 1300 Series GC Operations

Course Objective:

The aim of this course is to familiarize the new Thermo Scientific™ Trace™ 1300 Series GC user with basic instrument operation including gas chromatography theory and optimization, routine maintenance, data acquisition and data processing.

The training course will cover:

- Trace 1310 – General Overview
 - Oven
 - Split/Splitless Injector (SSL) & PTV
 - FID Detector & other detectors
 - Keypad familiarization
 - Removing and fitting Injector/Detector units
- Thermo Scientific™ AS/AI 1310 Series Autosampler & Thermo Scientific™ TriPlus™ Autosampler
- Gas Connections
 - Function of specific gases used
 - Carrier gas options
 - Modes of carrier gas use
 - Gas filters
- Setting up your GC
 - Column Installation
 - Detector configuration
- SSL – Principle of operation
 - Injector design
 - Split and splitless modes
 - Choice of Liner
 - Modes of operation
 - Setting the variable – flow/temperature/purges
- FID - Principle of operation
 - Cleaning the collector
 - Gas flows & make-up gas
- Sample Injection
 - Using the autosampler - programming the injection parameters
 - Manual Injection Techniques
- GC Operator Maintenance
 - Septa replacement
 - Liner replacement/changing/cleaning
 - Syringe replacement
- Chromeleon using the Trace 1300 Series GC
 - GC Configuration
 - Trace 1300 Series Gc & the Chromeleon Console
 - Method (Instrument) set-up
 - Sequence set up
 - Data processing & General reporting
- GC Troubleshooting
 - General approach to identifying, fixing and preventing system faults
- Tips & tricks

Chromatography

GC-MS

Training: ISQ Operations with Chromeleon 7.2

Course Objective:

The aim of this training course is to familiarize the new user with basic instrument operation of the Thermo Scientific™ ISQ™ Series Single Quadrupole MS System, including gas chromatography, optimization for mass spectrometry, maintenance, EI, CI and tuning, calibration, data acquisition, data processing and the general functionality of the Thermo Scientific Chromeleon software package.

The course material includes:

- GC Theory and Optimisation (EI and CI)
- GC and ISQ (LD and QD) Hardware and Maintenance
- Scan Functions
- Qualitative Set Up and Processing
- Quantitative Set Up and Processing
- Introduction to new software packages for GC-MS

Training: TSQ 8000 Evo Operations

Course Objective:

The aim of this training course is to familiarize new users of the Thermo Scientific™ TSQ™ 8000 Evo Triple Quadrupole GC-MS/MS with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance, EI, CI and tuning, calibration, data acquisition, automated SRM development, data processing and the general functionality of the Thermo Scientific TraceFinder and Chromeleon software packages

The course material includes:

- GC Theory and Optimization (EI and CI)
- GC and TSQ 8000 Hardware and Maintenance
- Scan Functions
- Qualitative Set Up and Processing with Tracefinder or Chromeleon
- Quantitative Set Up and Processing with Tracefinder or Chromeleon

Training: TSQ Duo Operations

Course Objective:

The aim of this training course is to familiarize new users of the Thermo Scientific™ TSQ™ 8000 Evo system with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance and quadrupole theory, tuning, calibration, data acquisition, automated SRM development, data processing and the general functionality of the Thermo Scientific Chromeleon software package.

The course material includes:

- GC Theory and Optimization
- Quadrupole Theory
- GC and TSQ 8000 Hardware and Maintenance
- Scan Functions
- Qualitative Set Up and Processing with Chromeleon
- Quantitative Set Up and Processing with Chromeleon

This course is offered at customer site only

Chromatography

GC-MS

Training: Q Exactive GC-MS/MS Operations

Course Objective:

The aim of this training course is to familiarize new users of the Thermo Scientific™ Q Exactive™ GC Orbitrap™ GC-MS/MS system with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance, EI, CI, MS/MS and Orbitrap theory, tuning, calibration, data acquisition, data processing and the general functionality of the software package.

The course material includes:

- GC Theory and MS Source Optimization (EI and CI)
- High resolution and accurate mass: definitions
- Orbitrap Theory
- GC and Q Exactive Hardware and Maintenance
- Scan Functions
- Qualitative Set Up and Processing
 - Target screening with a database
 - Deconvolution and High Resolution screening
- Quantitative Set Up and Processing

This course is offered at customer site only

Training: Exactive GC-MS Operations

Course Objective:

The aim of this training course is to familiarize new users of the Thermo Scientific™ Exactive™ GC Orbitrap™ GC-MS system with basic instrument operation including gas chromatography optimization for mass spectrometry, maintenance, EI, CI, MS and Orbitrap theory, tuning, calibration, data acquisition, data processing and the general functionality of the software package.

The course material includes:

- GC Theory and MS Source Optimization (EI and CI)
- High resolution and accurate mass: definitions
- Orbitrap Theory
- GC and Exactive Hardware and Maintenance
- Scan Functions
- Qualitative Set Up and Processing TraceFinder
 - Target screening with a database
 - Deconvolution and High Resolution screening
- Quantitative Set Up and Processing TraceFinder

This course is offered at customer site only

Chromatography

GC-MS

Training: TraceFinder Software

Course Objective:

TraceFinder is a software package with built-in workflows that have been developed to assist in routine analysis of environmental and food residue applications. The aim of this training course is to provide new users with the ability to use the software to its full potential. Detailed presentations will be given on all TraceFinder functionalities together with hands on exercises in order to ensure understanding of all the processes. The software setup, user selection and all the steps necessary for data collection and processing, data analysis and report generation will be covered. This training module can be combined with any of the instrument Operations courses on offer.

Chromeleon Software

Training: Introduction to Chromeleon 7.2 – Level 1

Course Outline

- Navigating in the Chromeleon Console
- Setting up Analysis
- Executing an eWorkflow
- Navigating in the Chromatography Studio
- Data Processing
- Manual Integration of Peaks
- Report Designer
- Import and Export of Data

Who Should Attend?

This course has been designed for chromatographers who are new to the Chromeleon CDS Software workstation or for existing users who require refresher training.

Training: Next Steps in Chromeleon 7.2 – Level 2

Course Outline

- Managing Custom Variables
- Defining Automated System Suitability and Intelligent Run Control Actions
- Calibration Principle
- Report Designer
- Charts and Queries
- Creating an eWorkflow

Who Should Attend?

This course has been designed for experienced users of Chromeleon CDS Software or delegates who have attended the introductory course.

Training: Chromeleon 7.2 for Mass Spectrometry

Course Outline

- Navigating the Console in MS
- Setting up analysis with MS
- Qualitative data processing with Library Searching
- Quantitative data processing
- MS filters and channels
- MS Reports

Who Should Attend?

This course has been designed for chromatographers who are new to Chromeleon CDS Software utilizing Mass Spectrometry.

Ion Chromatography (IC)

Training: Ion Chromatography New Operator course

Course Objective:

The course covers basic ion chromatography theory with explanations as to how each component of the system functions, ensuring the operator can perform basic analysis together with a useful understanding of ion chromatography instrumentation, including automation. It also includes front line hardware maintenance, column care and assists the operator in developing troubleshooting skills..

The training will be over two days and will cover:

- Fundamentals
 - Review of basic liquid chromatography principle
 - Principles of ion exchange and column chemistry
 - Theory of suppression
 - Method Development
- Modes of Detection
 - Conductivity
 - Electrochemical
 - Optical
- Advanced technologies
 - Eluent generation: RFIC vs. Manual eluent preparation
 - Sample preparation
- Practical session
 - Use of different systems (compact and modular ICS systems)
 - Use of different autosamplers
 - Troubleshooting and basic maintenance

HPLC Systems

Training: New Operator Course for UltiMate 3000

Course Outline

- A basic introduction to HPLC
 - Fluid mechanics
 - HPLC Theory
 - Method Transfer
- Understanding of the practical aspects of the instrument
 - General setup of HPLC systems
 - Familiarization with the Thermo Scientific™ UltiMate™ 3000 UHPLC system
 - Instrument Control
 - Practical tips to improve system performance
- Maintenance and Troubleshooting
 - Effectively detecting, troubleshooting and rectifying common issues
 - Performing instrument maintenance
 - Carrying out relevant diagnostic tests
 - Experience from hands-on laboratory exercises
 - Replacing common HPLC parts

Who Should Attend?

This course has been designed for new users or potential users of the UltiMate 3000 HPLC, Ultimate 3000 RSLC (Rapid Separation) and Vanquish systems.



Chromatography

GC-MS

Training: Fundamentals of HPLC

Course Objective:

This one-day course introduces the fundamentally important concepts associated with HPLC analysis including hardware basics, modes of analysis, basic troubleshooting, column chemistry, principles of ionization and more.

Suitable as a refresher for the more experienced chemist or as an invaluable introduction to the technique for those with limited experience, this course provides an invaluable insight into HPLC principles and practice.

The training course will cover:

- Basics of the Chromatography Process
 - Main retention mechanisms in HPLC
 - Distribution constant
 - Retention theory
 - Model of the chromatographic process
- Sample Preparation Protocols
 - Principles
 - Matrix elimination
 - Liquid and Solid Phase Extraction
- Separation Mode / Retention Mechanisms
 - Absorption (normal phase)
 - Reverse Phase
 - Principles of ionization (Ion Suppression Chromatography)
 - Ion pairing
 - Ion exchange
- Quantitation
 - Integration parameters
 - System suitability testing
- Injectors and Columns
 - Sample introduction
 - Rheodyne injectors / auto-samplers
 - Silica as a solid support
 - Column & packing geometry
 - Efficiency – the van Deemter & Knox equations
- Detectors
 - Choosing the right detector
 - Operating principles
 - Optimization
 - Typical operating conditions
 - UV (Diode Array) / RI / Fluorescence
- Measuring and Optimizing Chromatographic Parameters
 - Efficiency
 - Capacity factor
 - Selectivity
 - Resolution
 - Interdependence via the resolution equation

HPLC Systems

Training: New Operator Course for Vanquish UHPLC

Course Outline:

- A basic introduction to HPLC
 - Fluid mechanics
 - HPLC Theory
 - Method Transfer
- Understanding of the practical aspects of the instrument
 - General setup of HPLC systems
 - Familiarization with the Thermo Scientific™ Vanquish™ UHPLC system
 - Instrument Control
 - Practical tips to improve system performance
- Maintenance and Troubleshooting
 - Effectively detecting, troubleshooting and rectifying common issues
 - Performing instrument maintenance
 - Carrying out relevant diagnostic tests
 - Experience from hands-on laboratory exercises
 - Replacing common HPLC parts



On-Site Training Course

Course Description

On-site training provides your company with the opportunity to create a custom made course which meets your specific requirements. Customized training courses of various lengths and content can be designed and held in your training facility, laboratory or at one of our locations.

Courses can include any of the topics covered in the previous pages plus:

- Software Features for Photodiode Array Detection
- Software Features for Report Publishing
- Using Chromeleon to Comply with 21 CFR 11
- Chromeleon Software Features for Administrators
- Advanced Software Features for Fraction Collection
- Thermo Scientific™ Dionex™ ASE™ instruments operations
- AutoTrace Solid Phase Extraction
- Electrochemical and CAD Detectors
- Dionex Ultimate Nano and Capillary LC Systems operations

Training Schedule 2018

COURSE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Introduction to Chromeleon 7.2 – Level 1	16	6	6	17	15	5	3	7	18	2	6	11
Next Steps in Chromeleon 7.2 – Level 2	17	7	7	18	16	6	4	8	19	3	7	12
Chromeleon 7.2 for Mass Spectrometry		8		19					20			13
Fundamentals of GC			14							9		
Fundamentals of HPLC			15							10		
Ion Chromatography – New Operator Course		6-7		11-12	22-23		31-1			2-3		4-5
ISQ Operations – Chromeleon			20-22			19-21				16-18		
U3000 Operations		20-21								23-24		
Trace 1300 Series GC Operations		22-23								25-26		
Vanquish Operations					15-16							
TSQ 8000 EVO Operations with TraceFinder		27-1									13-15	
TSQ 8000 EVO Operations with Chromeleon							17-19					
ISQ EC Operations					22-23						20-21	



Hemel Hempstead, tuition in English.



Runcorn, Tuition in English.



Paisley, tuition in English.



Dublin, tuition in English.

Trace Elemental Analysis

Optimize Your Processes. From AAS to ICP, our experience and intrinsic knowledge of the market will help you expedite applications and streamline your process for maximum efficiency and productivity. Whether it's environmental, petrochemical or clinical, our experienced instructors will prepare you to operate your instrument and software with ease.



Trace Elemental Analysis

Atomic Absorption Spectroscopy (AAS)

Training: Flame AAS Operations

Course Objective:

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

The course material includes:

- Absorption and Emission Theory
 - Hardware: Set up, Use and Optimization
 - Correction System for Non-Specific Absorptions
 - Influence of Experimental Parameters
 - Absorption and Emission Analysis
 - Non-Specific Absorption and Chemical Interferences
 - Maintenance
 - Sample Solubilization
 - Quality Control Tests
-

Training: Furnace AAS Operations

Course Objective:

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

The course material includes:

- Theory of Absorption
- Development of an Analytical Method
- Hardware: Set Up, Use and Optimization
- Non-Specific Absorption and Matrix Modifiers
- Correction System for Non-Specific Absorptions
- Maintenance
- Sample Solubilization
- Influence of Experimental Parameters
- Quality Control Tests

Trace Elemental Analysis

ICP-OES

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:

- Atomic Spectroscopy Theory
- Instrument Optimisation
- Identifying and Overcoming Interferences in ICP
- Overview of Software Packages available
- Quantitative Analysis
- Instrument Hardware, Maintenance and Troubleshooting

Training Schedule 2018

COURSE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ICP-OES Operations		20-21		17-18			17-18			16-17		11-12



Hemel Hempstead, tuition in English.

Inorganic Mass Spectrometry

Increase Your Efficiency. Designed to offer both practical and theoretical training, the Inorganic Mass Spectrometry courses are taught by experienced and certified instructors. Covering a wide range of techniques our courses ensure that the customer interests and needs are covered regardless of the uniqueness of their application.



Inorganic Mass Spectrometry

ICP-MS

Training: iCAP Q and iCAP RQ Operations

Course Objective:

This course covers the fundamentals of the Thermo Scientific™ iCAP™ Q ICP-MS and Thermo Scientific™ iCAP™ RQ ICP-MS system operation and maintenance with a mixture of lectures and practical sessions. Topics include atomic spectroscopy theory, plasma description, hardware, tuning and method setup, functionalities of the Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution™ Software package, basic maintenance and troubleshooting.

- Quadrupole ICP-MS Fundamentals
 - ICP-MS Analysis and Method Development
 - Analytical Issues: Sample Preparation, Matrix Effects
 - Calibration
 - Data Management and Processing
-

Training: iCAP TQ Operations

Course Objective:

This course covers the fundamentals of the Thermo Scientific™ iCAP™ TQ ICP-MS system operation and maintenance with a mixture of lectures and practical sessions. Topics include atomic spectroscopy theory, plasma description, hardware, tuning and method setup, functionalities of Qtegra ISDS Software, basic maintenance and troubleshooting.

The course material includes:

- Triple quadrupole ICP-MS Fundamentals
- Interferences and solutions
- Using reactive and collisional gases
- Flatapole Technology (QCell)
- ICP-MS Analysis and Method Development
- Qualification and Performances Report
- Calibration
- Data Management and Processing
- Multi Elements and Multi-Modes Analysis
- Maintenance

This course is offered at customer site only

Training Schedule 2018

COURSE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
iCAP Q Operations	16-18		13-15			19-21			11-13		13-15	



Hemel Hempstead, tuition in English.

Discrete Industrial Analyzers (DIA)

Improve your productivity. Our discrete nutrient analyzers will offer a complete solution to rapid, random access sample analysis with efficient dip and sip sample and reagent consumption. Our experts in environmental, industrial, brewing and food and beverage analysis will provide you with 'hands on' instrument training using the intuitive software.



Discrete Industrial Analyzers (DIA)

Training: Thermo Scientific™ Gallery™, Gallery™ Plus, Gallery™ Plus Beermaster Automated Photometric Analyzer Systems

Course Objective:

The aim of this training course is to familiarize the new user with the principles of discrete analysis and instrument components using the bench top analyzers. Then the emphasis shifts to the software features, routine operation, explanation of Test Flows and their effect on range and limits of detection, through to results reporting, database management and basic troubleshooting.

The course material includes:

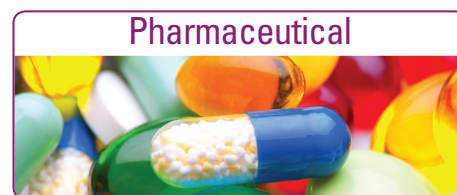
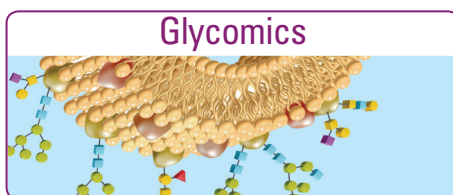
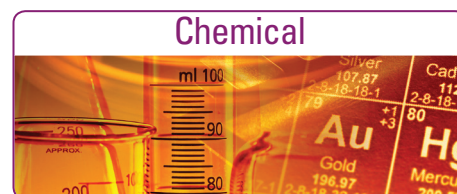
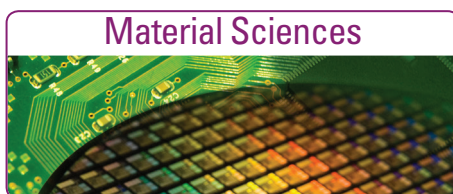
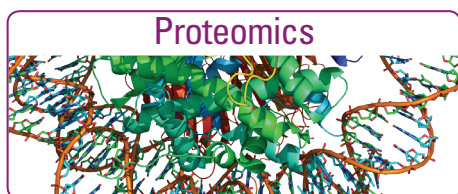
- Hardware Components
- Software Features
- Routine operation
- Method Test Flow Explanation
- Result Reporting and Database Management
- Preventative Maintenance and Basic Troubleshooting

Advance Your Knowledge

Stay in touch and receive tailored communications specific to your interests

Join one of our communities to access a wealth of information housed in our Knowledge Libraries. Each library is a collection of scientific applications literature, videos, webinars and resources based on your preference.

Scan the QR code or visit thermofisher.com/my-community



How to Register

For further information or to register on any of the courses listed, please use the following:

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Phone: + 44(0) 1442 233555

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Web: thermofisher.com/eustraining

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U.K.

Cancellation Policy

- We reserve the right to cancel any course, 30 calendar days prior to the scheduled start date, due to insufficient enrollment.
- We reserve the right to change the venue of the course, 30 calendar days prior to the scheduled start date.
- In the event of a venue change, you will be notified by a Thermo Scientific representative.
- Thermo Fisher Scientific will not be responsible for expenses incurred (for example, non-refundable airline reservations) if the course is cancelled or moved 30 calendar days prior to the scheduled start date.
- Attendee substitutions may be made at any time upon notification of the Training Institute Co-ordinator.
- Enrollment in your desired training course(s) is not guaranteed until receipt of the registration documents and confirmed method of payment.

Refund Policy

- 100% refund for cancellations received 15+ business days prior to course date.
- 50% refund for cancellations received 10-15 business days prior to course date.
- No refund for cancellations received fewer than 10 business days prior to course date.
- No refund for no-shows.

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