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## ATOMIC SPECTROSCOPY

### Atomic Absorption

N020-5001

2 days

Tuition \$1325

#### **Flame Atomic Absorption with AA Win Lab 32 Software**

This two-day course provides the analyst with the knowledge and skills needed for optimizing and troubleshooting basic flame atomic absorption. Laboratory exercises include experiments in controlling interferences as well as procedures for developing methods. WinLab software will also be covered.

#### **Prerequisite**

The analyst should have spent at least one month becoming familiar with the instrument and should have a working knowledge of Microsoft Windows and AA WinLab software before attending this course.

#### **Lectures and Labs**

Hardware optimization and calibration

Background correction

Setting up the element parameter file

Flame emissions analysis

Maintenance procedures

Interferences

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N020-0017

3 days

Tuition \$1900

#### **Graphite Furnace Atomic Absorption with AA Win Lab 32 Software**

This course will provide the analyst with the knowledge necessary to set up, run, troubleshoot, and maintain the graphite furnace. A considerable portion of this course is devoted to understanding the capabilities of the WinLab software used to operate the system. The course begins with the basics of graphite furnace atomic absorption (GFAA) and concludes with the most recent developments in the technique including simultaneous graphite furnace analysis.

#### **Prerequisite**

The student should have spent at least one month becoming familiar with the instrument, and should have a working knowledge of Microsoft Windows and the AA WinLab software before attending this course.

#### **Lectures and Labs**

Introduction to GFAA

Quality control

Setting up the element parameter file

Method development

Interferences

Optimization of simultaneous analysis parameters (SIMAA)

Matrix modifiers

Background correction systems

Troubleshooting and maintenance

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N020-0015

1 day

Tuition \$795

#### **FIMS/FIAS**

This course will provide the analyst with the knowledge necessary to set up, optimize and run the PE FIMS/FIAS system for the determination of mercury.

Laboratory exercises will be geared towards current AA systems.

Laboratory experiments include manifold construction for the determination of mercury.

#### **Prerequisite**

The student should have spent one month becoming familiar with the instrument, and should have a working knowledge of Windows and the AA WinLab software before attending this course.

#### **Lectures and Labs**

FIMS/FIAS theory

System components

Setup and optimization

Mercury analysis by FIMS/FIAS

Troubleshooting and maintenance

\*This course will be scheduled upon request

N020-0024

2 days

Tuition \$1325

### **Advanced Furnace AA**

This is a two-day laboratory intensive course, which will focus on how to handle difficult samples. The modifier and its role in solving analytical problems will be discussed in detail. The class will examine complex matrices, focusing on peak plot interpretation as a means to method development. Techniques such as QA/QC as a means of verifying the accuracy of data will be discussed. Class participants will be expected to have a good working knowledge of the software as this will not be addressed in the course. This course is **not** for the novice. The basic techniques of graphite furnace and an extensive knowledge of the Microsoft Windows-based software will be expected.

#### **Prerequisites**

The student should have completed course N020-0017 (basic Graphite Furnace) or have a minimum of six months experience with graphite furnace analysis and the WinLab software before attending this course.

#### **Lectures and Labs**

Method optimization	Solid sampling
Quality control for method validation	Understanding modifiers
Peak plot interpretation	

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N020-0026

3 days

Tuition \$1900

### **AA Environmental and Waste Water Analysis**

This course is an overview of atomic absorption (AA) spectroscopy with emphasis on Environmental and Waste Water Analysis. Theory, principles, methods and instrumentation for the different techniques (flame, HGA and cold vapor/hydride) as well as a comparison of these techniques in regards to elemental water analysis will be presented.

#### **Prerequisites:**

The analyst should have spent at least one month becoming familiar with the instrument, and should have a working knowledge of the AA WinLab software before attending this course, or have attended course N020-5001 or N020-0017.

#### **Lectures and Labs**

Flame techniques	Hydride and cold vapor techniques
Standard methods	Method for Hg (245.1)
Hardware optimization	Hardware concepts
Digestion overview	Standard and sample preparation
Interference corrections	Troubleshooting and maintenance
Graphite furnace techniques	Method 200.9
Hardware optimization	Digestion overview
Background correction systems	Troubleshooting and maintenance
Method development using stabilized temperature platform GFAA	

**\*This course will be scheduled upon request**

## GENERAL COURSE APPLICATION

### AIG

N020-9708

4.5 days

Tuition \$1,940

#### **Instrument Applications in Oil Analysis**

This 4 ½ day course provides the analyst with the knowledge and skills needed for analyzing, optimizing and troubleshooting new and used oils by ICP, FTIR and GC.

Prerequisite: The analyst should have a basic understanding of ICP, FTIR and GC including instrument and software operation.

This is NOT a course in basic instrument operation. Basic instrument operation is covered in specific courses offered by PerkinElmer. This course will deal strictly with the analysis oils by each technique that will include lectures and lab demonstrations.

#### **Lectures and Labs**

ICP (wear, contaminate and additive metals)

Basic concept

Sample and Standard preparation

Method development, software and instrument setup

Exporting data

Maintenance and troubleshooting problems.

FTIR (contaminate, oil degradation products and additive depletion)

Basic concept

Instrument configuration and software operation

Detailed description of the reference and JOAP methods

Exporting data

Maintenance and troubleshooting problems

GC (fuel dilution and glycol contamination)

Basic concept

Sample and Standard preparation

Method development, software and instrument setup

Exporting data

Maintenance and troubleshooting problems.

\*This course is available upon request

# CHROMATOGRAPHY DATA SYSTEMS & LIMS

## TotalChrom

N020-1043

3 days

Tuition \$1420

### **TotalChrom Principles of Operation**

This three-day lecture and lab course presents users of TotalChrom Workstation and Client/Server with a fundamental knowledge of the theory and operation of the software, basic maintenance, and troubleshooting. Discussion and hands-on exercises emphasize acquiring data, developing quantitative methods, and reprocessing data. This course is for key operators of laboratories who need formal product training or operators who need more comprehensive training than that supplied by on-site familiarization courses.

#### Prerequisite

A fundamental understanding and/or experience using the Microsoft Windows 95, 98 or 2000 operating systems are strongly recommended for this course. Thirty to sixty days of product usage before the class is recommended.

#### **Lectures and Labs**

System overview

Data acquisition

PerkinElmer Intelligent Interface

Graphic reprocessing

Software configuration

Comparing chromatograms

Peak detection and identification

Batch

Generation and calibration of method files

Generation of sequences

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## LABWORKS

N020-2606

2 day

Tuition \$1000

This two day LABWORKS LIMS User Training course is designed for the beginner or intermediate user.

Knowledge of the LIMS software is preferred but not mandatory. Users, who are new to the system, will gain valuable insight in the overall system functionality that will allow them to leave the course with the knowledge of how to effectively use this program.

The training course will cover overall LIMS system architecture followed by basic user operation and leading into more advanced functions. The participants will be able to use the knowledge gained to adequately use the LIMS software on their system.

This training program is designed to be presented as modules containing a detailed student handout in each lesson. The student handout lists the terminology as well as practical laboratory exercise used in that subject.

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N020-2607

3 day

Tuition \$1500

This three day LABWORKS LIMS System Manager Training course is designed for the advanced user or information management professional with the responsibility as a Labworks LIMS system manager. A working knowledge of the Labworks LIMS software is mandatory. The training course covers complete development of a LIMS system from installation to routine management tasks.

The student will leave the course with the knowledge of how to effectively implement and manage a Labworks LIMS system. This includes overall LIMS system architecture, the creation of location codes, and analysis codes. LIMS system management of user fields, data directories and the Labworks system manager mode. This advanced training course covers basic Labworks.ini settings and the troubleshooting server and the client problems.

#### Prerequisite

System Labworks LIMS system should be installed and operational. Completion of the LABWORKS User Course is mandatory (N020-2606) or familiarity with a previously-installed LABWORKS system

# GAS CHROMATOGRAPHY

## Fundamental Gas Chromatography

N020-0407

3 days

Tuition \$1900

This 3-day course provides an overview of the basic principles, hardware, and operational techniques used in gas chromatography, along with column overview.

### **Prerequisite**

The student should have spent at least one month becoming familiar with the Clarus instrument.

### **Lectures and Labs**

Basic principles of GC

Hardware, gases, injectors,  
detectors, etc.

Qualitative and quantitative analysis

Starting a chromatograph

Column installation, flow measurements

Setup of GC and data handling

Principles and optimization of  
data-handling parameters

**Note:** Students in need of detailed instruction using TotalChrom software should attend the appropriate Chromatography Data Systems course. TotalChrom Principles will **not** be included in this course.

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N020-0417

4 days

Tuition \$2490

## **Clarus GC/MS Operator Training**

This course introduces new Clarus GC/MS and users to gas chromatography/mass spectroscopy (GC/MS) and gives them an orientation to the hardware, software, and experimental requirements to accomplish successful system operation. Laboratory exercises provide an opportunity to carry out the main operations described in the lecture material.

### **Prerequisite**

Students are required to have completed one of the PerkinElmer gas chromatography training courses, or to certify a history of extensive GC experience. The student will also be required to have at least one month of experience with an installed and operating Clarus MS system.

### **Lectures and Labs**

Fundamentals of Clarus-hardware  
and software

Connecting the GC and MS

Cold starting the instrument

Tuning the instrument

Developing a method for  
instrument control and data acquisition

Developing a Clarus MS method for Quantization

System maintenance and  
troubleshooting procedures

Spectral data processing and  
library searching

Quantitative methods

construction and data analysis

General maintenance

Developing a GC control method

N020-0474

2 days

Tuition \$1325 NEW

### **Principles of GC Headspace**

This is a course designed to address equilibrium head space utilizing the PerkinElmer TurboMatrix HeadSpace and Headspace Trap. The course includes basic and advanced techniques, including applications, method development, maintenance, and trouble shooting.

Day One

#### **Introduction**

PerkinElmer's history in equilibrium headspace

The theory of headspace

Partitioning

Activity coefficient

When is headspace applicable, and why chose this technique over direct injection or other sample introduction techniques.

Accuracy in quantitation

Equilibrium

Matrix effect

Benefits of MHE

Determining partition coefficients

#### **Lab**

Rigorous review of the GUI interface

Change Needle, "O" rings, transfer line, glass lined "T"

Equilibrium Head Space: the Technique and Applications

Day Two

Operation of Headspace and Headspace Trap

Modes: Constant with Overlap, Progressive, Trap , MHE

Total Evaporation

Applications

Enhancing detection limits

Troubleshooting

Build three methods- Constant, Trap, and MHE

Build a sequence using all three modes

Determine the effect of sample volume on detection limits with analytes with different partition coefficients

Demonstrate "Salting Out Affect" on compounds with high K values.

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N020-0497

2 days

Tuition \$1325 NEW

### **GC Communique**

This one day course is designed to familiarize students with the Communique software and reporting techniques.

#### **Prerequisite**

Working knowledge of TurboMass software.

Sample Lists, GC Methods, MS Method, Quantify Methods

Working knowledge of Windows Explorer.

Working knowledge of Windows 98, NT or 2000 graphic user interface.

A good general level of PC experience

Course will cover:

Reporting

Calculations

## INDUCTIVELY COUPLED PLASMA (ICP)

N020-5010

3 days

Tuition \$1900

### Optima Instrument Series with ICP WinLab 32 Software

This comprehensive course comprises a study of basic emission theory, radial versus axial viewing, Optima hardware, and WinLab 32 software. All lab experiments will be conducted on current models of the PerkinElmer Optima series.

#### Prerequisite

Analysts should have spent at least one month becoming familiar with the instrument and should have a working knowledge of WinLab 32 software before attending this course.

#### Lectures and Labs

Theory of atomic emission	Background correction
Plasma performance	Multicomponent Spectral Fitting (MSF)
Identifying and overcoming interferences	Interfering Element Correction (IEC)
ICP components, including segmented-array charged coupled detector	Echelle optical system
Radial vs. axial viewing	Method development
Maintenance	Parameter optimization
Data reprocessing	

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N020-0027

2 days

Tuition \$1325

### Advanced Optima ICP

This two-day course provides analysts with the knowledge needed to develop a method for ICP-OES analysis of complex samples. This lab intensive course covers when and how to use internal standards, inter-element correction factors (IECs) and multi-component spectral fitting (MSF) effectively to obtain accurate results.

#### Prerequisites

The student should have completed course N020-5010 (Optima ICP with ICP WinLab Software) or have a minimum of six months experience with the Optima ICP and the WinLab software before attending this course. This course is not recommended for beginners.

#### Lectures and Labs

Identifying interferences	Using internal standards
Inter-element correction factors	Multicomponent spectral fitting

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N020-0028

2 days

Tuition \$1325

### ICP Environmental and Waste Water Analysis

This course is an overview of ICP Atomic Emission Spectroscopy with emphasis on Environmental and Waste Water Analysis. Basic requirements of current ICP emission EPA methods (200.7 and 6010) will be discussed.

#### Who Should Attend

Analysts who will be performing routine Environmental and Waste Water analysis using ICP Atomic Emission systems.

#### Prerequisite

Students should have one month familiarization with the instrument or attended course N020-5010 and should have a working knowledge of the software before attending this course.

#### Lectures and Labs

Optimizing ICP operating parameters	Standards
Detection limit considerations	Internal standardization
Method development criteria	Inter-element Correction (IEC)
Background correction and interferences	Multi-component Spectral Fitting (MSF)
ICP systems performing environmental and Waste Water Analysis	Startup information

\*This course will be scheduled upon request

N020-0076

3 Days

Tuition \$1900

### Interactive Remote ICP w/WinLab 32 Software

This course will cover WinLab32 software.

Computers are provided to allow students to set up methods and solve analytical problems using real data.

No operational or maintenance hands-on will covered in this course.

**Prerequisite**

Analysts should have spent at least one month becoming familiar with the instrument and should have a working knowledge of the WinLab32 software before attending this course.

**Lectures and Labs**

- Concepts of ICP
- ICP performance characteristics
- Steps for method development and optimization
- Identifying and correcting interferences
- Using QA/QA for data validation
- Operation discussion
- Setting up methods
- Setting background points
- Identification of Interferences
- Using internal standards
- Using IEC's
- Using MSF

## INDUCTIVELY COUPLED PLASMA – MASS SPECTROMETRY (ICP-MS)

N020-0008

4 days

Tuition \$2490

### ELAN M/S with ELAN Software

This introduction to the ICP-MS analytical technique includes some theoretical background of ICP-MS. Laboratory experiments will be conducted to show how to set up, optimize and maintain the ICP-MS instrument. In addition, data will be collected by means of various analytical methods available with this technique. All lab experiments will be conducted on current models of ICP-MS instruments.

#### Prerequisite

Students should have spent at least one month becoming familiar with the instrument, and should have a working knowledge of the software before attending this course.

#### Lectures and Labs

Semi and quantitative methods

Interpretation of spectra

Hardware and software introduction

Methodic/Isotopic development

Routine tests of instrument performance

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N020-5044

1 day

Tuition \$795

### ELAN DRC

This one-day course will provide the knowledge and skills needed to properly operate the ELAN DRC. Laboratory experiments will be conducted to show the analyst how to set up and optimize the accessory for routine analysis. All lab experiments will be conducted on current models of ICP-MS instruments.

#### Prerequisite

The student must attend course N020-0008 prior to attending this course.

#### Lectures and Labs

ELAN DRC hardware and software introduction, method development

Routine tests of instrument performance

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N020-0193

5 days

Tuition \$2940 NEW!

### ICPMS NexION Instrumentation

This five day course will cover the NexION series of ICP-MS. This course will be a combination of classroom lectures and hands on laboratory experiments and exercises. The items covered will consist of the following:

ICP-MS theory

Overview and discussion of the hardware of the NexION

Software training

Discussion on optimization and setup of the instrument

Introduction into the optimization and the use of Universal Cell Technology (UCT)

ICP-MS method development

Troubleshooting, and maintenance

Reporting and data exporting

Prerequisite Students should have spent at least one month becoming familiar with the instrument, and should have a working knowledge of the software before attending this course.

Also as part of this course material, appropriate lab exercises will be conducted that are related to the discussions held. Laboratory experiments will be conducted to show how to set up, optimize and maintain the ICP-MS instrument. In addition, data will be collected by means of various analytical methods available with this technique. All lab experiments will be conducted on the NexION models of ICP-MS instruments.

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N020-0522

3 days

Tuition \$1900

### **LC/ICP-MS Instrumentation-Metal Speciation**

This advanced course will cover the concept and implementation of speciation analysis by coupling the analytical techniques of inductively coupled plasma emission mass spectrometry (ICP-MS) and liquid chromatography (LC). This course will include a one-day primer on LC, a review of ICP-MS optimization and the interfacing of the two techniques.

Also included is basic training on how to use the Chromera software. Laboratory experiments will be conducted to show how to set up this technique and collect data. This data will be collected using two of the available modes of LC. All lab experiments will be conducted on the current models of the ICP-MS, LC pump and autosampler.

#### **Prerequisite**

Students should be very familiar with the ELAN series of ICP-MS instrumentation and should have a strong working knowledge of the ELAN software before attending this course. Ideally students should have attended the basic ICP-MS course (course number N020-0008).

#### **Lectures**

Introduction to Databases

Fundamentals of HPLC

Interfacing HPLC to ICP-MS

HPLC Hardware Familiarization

Selenium Speciation

Review of ICPMS Optimization

Software (Chromera)

HPLC Troubleshooting

Computer Based Software Exercises

Arsenic Speciation

## INFRARED SPECTROSCOPY

N020-0120

1 day

Tuition \$795

### Sample Preparation for Infrared Spectroscopy

This fundamental course in infrared sample preparation provides students with instruction on various sample handling techniques, allowing them to acquire good quality spectra by either transmission or reflectance. Through classroom sessions and laboratory exercises, the students will learn to prepare solids, liquids and solution samples for transmission studies. Students will also learn to align and acquire data on internal reflectance, specular reflectance and diffuse reflectance accessories.

#### Lectures and Labs

Solid sample handling techniques,

Diffuse reflectance accessories

Reflectance techniques, specular reflectance, internal reflectance

Liquids and solution sample handling

Cast films, Nujol, KBr pellet preparation

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N020-0126

2 days

Tuition \$1325

### Introduction to FT-IR and Spectrum Software

This course is an introduction to FT-IR spectrometers and software. Through a combination of classroom lectures and hands-on exercises, students will become familiar with the routine operations of PerkinElmer FT-IR spectrometers. Students will learn various data processing techniques that will enable the presentation of quality spectra and use of spectral library search routines and will also receive an introduction to Fourier-Transform (FT) instrumentation and the instrument setup commands for their instrumentation. This course also includes an overview of the software for FT-IR spectrometers and various processing commands.

#### Lectures and Labs

Introduction to FT-IR instrumentation

File, view and software setup exercises

Data processing exercises: smooth, flat, abex

Library search, instrument menus and setup

Arithmetic functions, derivative,  
peak height and area

Reflectance correction: Kubelka-  
Munk, Kramers-Kronig, MIR

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N020-0152

1 day

Tuition \$795

### IR Spectral Interpretation for Beginners

The lesson will cover vibrational infrared molecular structure and correlation charts. The student will be introduced to basic IR interpretation of spectra using functional group analysis, flow charts, direct comparison, visual pattern recognition and spectral library searching.

Various function groups such as OH, CH, NH, C=O, C=N, aromatic substitution and others will be discussed and assigned their various frequencies (cm<sup>-1</sup>) within the infrared region.

The student will learn the most direct way to interpret an IR spectrum, for example which are important absorption bands and those less important.

How to deal with mixtures, how to recognize artifacts in an IR spectrum.

The use of the Perkin-Elmer SPECTRUM SEARCH® software with its interactive interpretation will be covered.

#### Lectures and Labs

How absorption bands occur in the infrared portion of the IR

How to build your own IR spectral library.

Functional group analysis for example CH, OH, NH and others.

Which absorption bands are important, which are not.

Flow charts for polymers and drugs

Use of the Perkin-Elmer SEPCTRUM SEARCH® for identification of unknowns.

How to deal with mixtures of materials and spectral subtraction

How to recognize a high quality IR

Artifacts in an IR spectrum

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N020-0154

2 days

Tuition \$1325

### **Polymer Characterization Using FTIR Spectroscopy**

The student will be introduced to the use of FTIR spectroscopy for the identification of various polymers and polymer additives. Through the use of classroom lectures and hands-on laboratory experiments the student will learn the various FTIR sampling techniques for obtaining high quality FTIR spectra of various polymers and their additives.

A number of quantitative experiments of additives in polymers will be explored using Perkin-Elmer SPECTRUM BEERS LAW® quantitative software.

FTIR sampling techniques will include hot pressed films, diamond and horizontal ATR accessories. The use of a Perkin-Elmer IMAGE ® FTIR microscope for the identification of polymers and polymer contaminations will be explored.

Qualitative identification of various polymers and additives will be explored using the Perkin-Elmer SPECTRUM SEARCH® software. Together with the COMPARE function in Spectrum for Windows® software, the student will become familiar with setting up quality control procedures of polymers and polymer additives using the FTIR software.

Students are encouraged to bring several samples for discussion and use in the course.

functions in Spectrum for Windows® software.

#### **Lectures and Labs**

Introduction to FTIR theory and FTIR spectrometer operation

Polymer sample preparation for FTIR spectroscopy

Identification of polymers and polymer additives using software searching techniques and quantitative methods for additives and copolymers

Use of various software commands to process infrared spectra to obtain high quality spectral data, when to use spectral subtraction techniques and tricks associated with the various command functions in the PerkinElmer SPECTRUM FOR WINDOWS® software.

Generating your own spectral libraries using the Perkin-Elmer SPECTRUM SEARCH® software.

Quality control of polymers and polymer additives using the various QC software functions in Spectrum for Windows® software.

N020-0174

2 days

Tuition \$1325 NEW

### **Spectrum Express/Spectrum 10 Software**

This two day course is an introduction to FT-IR spectrometers, Spectrum Express™ and Spectrum 10™ FT-IR software. Through a combination of classroom lectures and hands-on exercises, students will become familiar with the routine operations of the software.

Students will learn various data processing techniques that will enable the presentation of quality spectra and use of spectral library search routines and will also receive an introduction to Fourier-Transform (FT-IR) instrumentation and the instrument setup commands for their instrument.

The first day of the course will cover Spectrum Express™ and its intuitive flow of processing an FT-IR spectrum through easy to understand command functions such as scanning and searching a spectrum in a library. The use of the COMPARE command will allow the user to compare spectra in a database of standards.

The second day will include an overview of the advanced Spectrum 10™ software for FT-IR spectrometers and setting up an FT-IR spectrometer to obtain the best quality spectrum. The use of spectral subtraction and software exercises such as smooth, flat, Absorbance Expansion (Abex) Reflectance correction: Kubelka-Munk, Library search, instrument menus and setup, Kramers-Kronig, MIR functions will be covered together with the COMPARE function and setting up spectral libraries

Students with Spectrum Express™ software, may if they wish, take the first day only. Students with Spectrum 10™ should take both days as Spectrum Express™ is incorporated into Spectrum 10™ software.

## LIFE SCIENCES

### RADIOMETRIC DETECTION (RRD)

N020-9775

3.5 days

Tuition \$2125

#### Janus

This course is primarily an overview of the WinPrep software. In-depth instruction and hands-on exercises focus on assay programming, using advanced functionalities, optimizing liquid handling performance, and basic instrument maintenance. A fourth day includes instruction on optional equipment that can be incorporated onto the Janus platform.

#### Lectures and Labs

Hardware overview	User diagnostics
Liquid handling concepts	Calibration
WinPrep procedure templates	Single liquid transfers
Reagent dispensing	Multiple liquids
Plate replication/expansion/compression	Troubleshooting
Optimizing liquid handling procedures	Mapping
Plate lidding/delidding	Dilutions
Accusense liquid level sensing	User Maintenance
Custom procedures	Performance Files
Embedded procedures	Importing user files
Labware definition	Variables
Labware creation	Selected options
Performance Files	

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N020-9650

3 days

Tuition \$1900

#### Tri-Carb LSC

This course is designed to present an overview of the use of LSC for quantitative measurement of radioactivity in a wide range of sample types including liquids, solids, filter membranes and surface monitoring (swipes). The theory of nuclear decay, nuclear detection, quench and quench correction, cocktails, cocktail selection and sample preparation methods will be discussed. The course will include laboratory sessions with exercises in protocol setup, quench curve preparation, direct and indirect DPM measurements, analysis of unknown samples, and IPA. Practical tips and hints on instrument optimization and sample analysis will also be presented.

#### Lectures and Labs

Basic nuclear theory	Sample preparation techniques
Basic scintillation counting	Direct DPM methods
Quench	Counting statistics
DPM determination	Advanced LSC topics
Calibration/normalization	Analysis of unknown samples
Spectrum analysis	Cerenkov counting
Counting region optimization	Dual-label radionuclide analysis
Quench curve preparation and setup	
Cocktail selection	

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N020-9648

3 days

Tuition \$1900

**Quantulus**

This three day training will provide the participant with the knowledge necessary to run the Quantulus instrument.

Lectures and Labs

Basic Nuclear Theory

Basic Liquid Scintillation Counting

Background Reduction Techniques Implemented in the Quantulus

WinQ Protocol Editor and Data Acquisition Software

EasyView Spectrum Analysis Software

Instrument Performance Testing

Counting Statistics

Quench and Quench Correction

Quenched Standards Preparation and Quench Curve Entry

Spectrum Analysis

Single and Dual Label DPM Analysis

Counting Region Optimization

Sample Preparation Techniques

Cocktail and Vial Selection

Gross Alpha Counting

Alpha / Beta Separation

## LIQUID CHROMATOGRAPHY

N020-0501

2 days

Tuition \$1325

### Fundamental Liquid Chromatography

For the beginner, this introduction to liquid chromatography provides an overview of the principles and practice of high-performance liquid chromatography (HPLC). The topics covered are basic chromatographic terminology, modes of HPLC (normal and reversed-phase, size exclusion, and ion exchange chromatography), instrumentation, peak identification and method development, a brief applications review, and routine maintenance and troubleshooting.

#### Prerequisite

The student should have spent at least one month becoming familiar with the instrument.

#### Lectures and Labs

History and theory of LC

Basic chromatographic parameters

Modes of HPLC

Hardware familiarization

Hardware components

Peak identification

Peak identification and method development

Method development

Applications overview

Routine maintenance

Troubleshooting

**Note:** Students in need of detailed instruction using TotalChrom software should attend the appropriate Chromatography Data Systems course. TotalChrom Principles will **not** be included in this course.

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N020-2402

3 days

Tuition \$1900 NEW

### LC Chromera

This three-day lecture and lab course presents users of Chromera 2 with a fundamental knowledge of the theory and operation of the software, basic maintenance, and troubleshooting. Discussion and hands-on exercises emphasize acquiring data, developing quantitative methods, and reprocessing data. This course is for key operators of laboratories who need formal product training or operators who need more comprehensive training than that supplied by on-site familiarization courses.

#### Prerequisite

A fundamental understanding and/or experience using the Microsoft Windows operating systems are strongly recommended for this course. Thirty to sixty days of product usage before the class is recommended.

#### Lectures and Labs:

Software configuration/Data acquisition

Peak detection and identification

Graphic and Batch reprocessing

Calibration of methods

Report generation/database tools

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N020-0539

1 day

Tuition \$795 NEW

### Advanced Topics for LC Chromera

#### Prerequisite

Students are required to attend LC Chromera course prior to attending.



N020-0630

3 days

Tuition \$1900

**\*Diamond TG/DTA**

This course is designed for people who have recently started using the Diamond TG/DTA system. The practical aspects of operation and maintenance are covered. Participants will have an opportunity to become more familiar with the instrument.

**Prerequisite**

The student should have spent at least two weeks becoming familiar with the instrument. Quick Help tutorial has been reviewed.

**Lectures and Labs**

Diamond TG/DTA Basic Introduction and Theory

Maintenance and Troubleshooting

Instrument Precautions and Operating Tips

Calibration and Verification

**\*This course will be scheduled upon request**

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N020-0704

2 days

Tuition \$1325 NEW

**Intro to Organic Elemental Analysis-CHN 2400**

The 2400 CHN User Training course is designed to provide the student with the skills necessary to successfully operate, calibrate and perform basic maintenance on the 2400 CHN Elemental Analyzer. While this course is intended for students with minimal previous experience using our Elemental Analyzer, we highly recommend that the student become familiar with their 2400 in order to achieve a basic understanding of instrument theory and keypad operation. This would maximize the benefit of our training materials and laboratory instrumentation. Through a blend of informational classroom sessions and practical lab experiences, students will receive extensive hands-on experience of sample preparation, instrument performance and data analysis.

**Prerequisite**

The students should have spent at least 30 days becoming familiar with the instrument.

## TRAINING LOCATIONS

### **Chicago, Illinois**

PerkinElmer  
2000 York Road, Suite 132  
Oak Brook, IL 60523

### **Downers Grove, Illinois**

PerkinElmer  
2200 Warrenville Road  
Downers Grove, IL 60515

### **San Jose, California**

PerkinElmer  
75 Nicholson Lane  
San Jose, CA 95134

### **Shelton, Connecticut**

PerkinElmer  
710 Bridgeport Avenue  
Shelton, CT 06484-4794  
Tel: 800-762-4000 x4  
Fax: 203-944-4902

### **Toronto, Canada**

PerkinElmer  
501 Rowntree Dairy Road  
Unit 6  
Woodbridge, Ontario L4L8H1

## HOW TO ENROLL

Please mail or fax the completed enrollment form to:

### *For Canada/US Enrollment*

PerkinElmer  
710 Bridgeport Avenue  
Shelton, CT 06484  
Tel: (800) 762-4000 option 4  
Fax: (203) 944-4902

Or enroll over the web at [www.perkinelmer.com](http://www.perkinelmer.com)

For more information please call (800) 762-4000 x4 (outside US 203-925-4602)

please note, if paying by purchase order, you must provide a faxed copy of the purchase order.

### Registration

#### **To register by fax**

Photocopy and complete the course enrollment application provided in this document and fax the form directly to (203) 944-4902.

Purchase order or credit card payments must accompany the registration.

A confirmation letter will be sent within 48 hours of receipt of enrollment. If the class you have requested has been filled, a customer support representative will contact you to advise you of alternate class availability and place you on a waiting list to fill any late cancellations.

#### **To register by phone**

Contact the Training Center (800) 762-4000, option 4 with training request and payment information.

Please note:

PerkinElmer reserves the right to cancel a course due to low enrollment.

For that reason, we discourage the purchase of non-refundable airline tickets.

The customer will be given a minimum of two weeks notice of a course cancellation.

**\*\* PerkinElmer is not responsible for expenses incurred should a course be cancelled.**

## COURSE AGREEMENT / CANCELLATION POLICY

### Cancellation

Please note that PerkinElmer may cancel or reschedule courses up to 14 days prior to the start date if the minimum enrollment is not met. A full refund of the tuition fee will be provided if this happens. If air travel is required, we discourage the purchase of non-refundable tickets.

**\*Please note-PerkinElmer is not responsible for any travel expenses you incur should a class cancellation occur.**

Our refund policy regarding a student's cancellation from a class is as follows:

Up to 14 days prior to the course	Full Refund
Less than 14 days	No Refund (customer may schedule alternate date)

All cancellations must be made with the training administration office directly.  
For all training inquiries or cancellation, please contact us at (800) 762-4000, option 4.

### Payment

Payment is required upon enrollment.  
Purchase order or credit cards are accepted.

## TRAINING COURSE ENROLLMENT FORM

Email application to: [ustraining@perkinelmer.com](mailto:ustraining@perkinelmer.com)

PerkinElmer will not guarantee seating without purchase order or credit card for payment.

PH: (800) 762-4000, option 4 (US only)

FAX: (203) 944-4902

NAME \_\_\_\_\_

PH \_\_\_\_\_ FX \_\_\_\_\_ EMAIL \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/TOWN \_\_\_\_\_ STATE/COUNTY \_\_\_\_\_ ZIP/POSTALCODE \_\_\_\_\_

EXPERIENCE WITH PERKINELMER PRODUCTS \_\_\_\_\_ # OF YEARS \_\_\_\_\_

SPOKEN ENGLISH:    GOOD    AVERAGE    MINIMAL            WRITTEN ENGLISH:    GOOD    AVERAGE    MINIMAL

DIETARY REQUIREMENTS \_\_\_\_\_

\*PerkinElmer reserves the right to cancel a course if the minimum requirement is not met--in which case 2 weeks notice will be given.

Course #	Course Title	Course Date	Location

**METHOD OF PAYMENT: \*\*Payment must be submitted UPON registration.  
 Hard copy purchase orders must be submitted to 203-944-4902 (001 203-944-4902 Europe).  
 PerkinElmer cannot guarantee seating without payment.**

\_\_\_\_\_ CHECK ENCLOSED or Check # \_\_\_\_\_ (please fax copy of check)

\_\_\_\_\_ BILL MY COMPANY USING PURCHASE ORDER NUMBER \_\_\_\_\_  
 (Copy of purchase order MUST be included with registration in order to guarantee a seat in the class)

\_\_\_\_\_ CREDIT CARD (circle one)    MC    VISA    AMEX

Exp.Date: \_\_\_\_\_ Number \_\_\_\_\_

(Credit card information MUST be supplied upon registration).

Name as it appears on card: \_\_\_\_\_

\_\_\_\_\_ TRAINING WAS INCLUDED WITH SALE OF INSTRUMENT  
 (Please provide your PO number or our sales order number) \_\_\_\_\_

\*INSTRUMENT MODEL # \_\_\_\_\_ SOFTWARE VERSION \_\_\_\_\_  
 (\*Data necessary for course instructors)