

## Syllabus for 2.5 day advanced LC-MS maintenance and troubleshooting at SCIEX

SCIEX training courses follow the proven spaced learning approach to maximize learning retention. The training process includes a blend of instructor-led training, hands-on laboratory exercises and self-paced eLearning provided at a SCIEX location.

### Course goals and outcome

This course is intended for those who have completed a Success Program or have significant operational experience with SCIEX LC-MS systems. It is designed to provide experienced users with the knowledge necessary to successfully troubleshoot and fix common MS and HPLC issues. You will also learn how to proactively maintain your LC-MS system, and how to exchange various consumable parts to keep your system running properly.

The course provides a variety of hands-on troubleshooting and maintenance exercises, best practices and finishes with a troubleshooting challenge for the learner. It is delivered at a SCIEX location by an experienced SCIEX instructor, and is supported by a series of easy-to-use Quick Reference Guides.

Upon completing the course, you should be comfortable with performing basic and advanced HPLC and MS maintenance, tuning and calibrating the mass spectrometer, troubleshooting common HPLC and MS issues, understanding quantitation parameters, and using outlier settings and metric plots to identify issues with the data results.

This can lead to an increase in the productivity and uptime of your LC-MS system, and reduce the need for engineer call outs or remote assistance. You will gain knowledge of which consumables to keep on-site to increase your system uptime.

This course offers a workflow certificate upon completion of a final knowledge assessment.

### Training program overview

Your training includes the following:

- 2.5 days of instructor-led and hands-on training provided at a SCIEX location by an experienced instructor
- Related self-paced eLearning courses, lectures, reference material and lab exercises
- Access to SCIEX Now Learning Hub database of >100 eLearning courses
- Access to SCIEX Now online support tools
- Workflow certificate upon successful completion of final exam and permanent access to all course materials for reference

- P.A.C.E.<sup>®</sup> Continuing Education Credits

### Instructor-led training topics

- MS and HPLC troubleshooting
  - HPLC and MS best practices
  - HPLC and MS troubleshooting
- HPLC maintenance
  - Replace the autosampler needle
  - Replace low pressure rotors
  - Replace high pressure rotors
  - Replace check valves
  - Replace the plunger and plunger seal
  - Replace pump seals
  - Resetting counters
  - Understanding access controls
  - Autosampler calibration and position adjustment
  - Routine LC maintenance tasks
- MS maintenance
  - Front end cleaning under vacuum
  - Front end cleaning at atmospheric pressure
  - Ion guide cleaning
  - Replace or add pump oil
  - Replace air filter – where applicable
  - Replace source electrode (APCI or ESI probes) – where applicable
  - Replace source heater
  - Replace APCI corona discharge needle – where applicable
- Mass spectrometer tuning and calibration
  - Manual instrument tuning and calibration
  - Automated instrument tuning and calibration
- Quantitation troubleshooting
  - Important MQ4 and SignalFinder integration parameters
  - Outlier settings
  - Ion ratios
  - Metric plots
- Troubleshooting challenge
  - Practical exercise designed to test troubleshooting skills

## **P.A.C.E.<sup>®</sup> certification**

SCIEX is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E.<sup>®</sup> Program. Learners interested in obtaining a P.A.C.E.<sup>®</sup> certificate and P.A.C.E.<sup>®</sup> accreditation for taking this course (equal to 15 P.A.C.E.<sup>®</sup> credits) must attend the entire training session and complete a brief evaluation survey.

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## Consumables for 2.5 day advanced LC-MS maintenance and troubleshooting at SCIEX

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Tables 1 and 2 list consumables that may be required at your own site after the training course to perform any maintenance or troubleshooting exercises demonstrated during the training course. **Table 1** lists the consumables that only apply to specific LC-MS systems and **Table 2** lists consumables that apply to all LC-MS systems.

**Table 1: Consumables for specific LC-MS systems**

Applicable system	Description	Part number
<i>Varian HS 602-2000 roughing pump</i>	<i>Roughing pump oil</i>	<i>010998</i>
<i>Leybold SV28 roughing pump</i>	<i>Roughing pump oil</i>	<i>1027317</i>
<i>Leybold Sogevac MS40 roughing pump</i>	<i>Roughing pump oil</i>	<i>1034433</i>
<i>Shimadzu LC 20AD</i>	<i>Essential LC20 Kit</i>	<i>5045275</i>
<i>Shimadzu LC 20AD</i>	<i>Essential LC20 Kit Complete</i>	<i>5050501</i>
<i>Shimadzu LC 20XR</i>	<i>Essential XR Kit</i>	<i>5045276</i>
<i>Shimadzu LC 20XR</i>	<i>Essential XR Kit Complete</i>	<i>5050502</i>
<i>Shimadzu LC 30AD</i>	<i>Essential LC30 Kit</i>	<i>5045277</i>
<i>Shimadzu LC 30AD</i>	<i>Essential LC30 Kit Complete</i>	<i>5047079</i>
<i>All Sil HPV</i>	<i>FTG, UHPLC one piece fitting</i>	<i>4466409</i>

**Table 2: Consumables for all LC-MS systems**

Applicable system	Part number	Size
<i>Lint-free wipe</i>	018027	11 x 21 cm, 4.3 x 8.3 inches
<i>Small poly swab</i>	1017396	N/A
<i>PEEK tubing Red</i>	4425163	0.13 x 3000 mm
<i>PEEK tubing Yellow</i>	4407322	007"ID X 0.062"OD 50
<i>PEEK Tube Cutter</i>	011281	N/A
<i>Fitting PEEK Tee 0.020 in BORE</i>	1006550	N/A
<i>ToolKit</i>	5047014	N/A
<i>Pump Plunger Driver</i>	4425148	N/A
<i>AS Plunger Tool</i>	4425115	N/A
<i>AS Needle Seal Remover</i>	228-50570-00	N/A
<i>Stop Joint</i>	4426109	N/A
<i>Nuts &amp; Ferrule</i>	4426018	Ea x 10
<i>Syringe</i>	WC010615	1 mL
<i>Syringe needle</i>	1005819	1 mL
<i>Syringe adapter</i>	1008236	N/A
<i>Alconox packets</i>	400667DHR	N/A
<i>Essential MS Kit</i>	5043951	N/A
<i>Essential MS M-Heater Kit</i>	5044565	N/A
<i>Nebulizer Needle Kit</i>	027947	N/A
<i>LC/MS Standards Kit with High/Low PPGs</i>	4406127	N/A
<i>Triazine</i>	4376887	1
<i>Phenomenex Synergi 4 µm Fusion-RP 80Å HPLC Column</i>	4376878	50 mm x 2.0 mm

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