DRUG IMPAIRMENT.COM

Course Information Packet

General Course Details	
Course Title	Liquid Chromatography Essentials
Course Duration	3:48:39
Initial Launch Date	5/1/26
Course Description	This module focuses on practical execution of liquid chromatography, covering LC system setup, operation, and troubleshooting. Learners examine the LC flow path and the roles of system components including the solvent reservoir, degasser, pump, autosampler, column, detector, and data system. The course also addresses solvent handling, degassing, priming, pressure monitoring, and leak detection to ensure stable operation and reproducible data. Participants learn to select columns, mobile phases, and detectors while applying isocratic or gradient strategies and structured troubleshooting approaches to LC performance issues. The course closes with a deep dive into 5 possible detectors for liquid chromatographs, highlighting each detector's use-cases, strengths, and weaknesses.
Learning Objectives	- Identify key LC system components and describe their functions - Set up, prime, and equilibrate an LC system correctly - Select appropriate columns and mobile phases based on analyte chemistry - Apply isocratic and gradient elution strategies effectively - Diagnose and troubleshoot common LC performance issues - Differentiate LC detector types, with emphasis on Triple Quadrupole and QTOF systems
Lessons	1. LC 1- Lesson 2.1 Setting Up Your LC System- Flow Path and Solvents 2. LC 2- Lesson 2.1 Setting Up Your LC System- Pumps, Leaks, and Column Equilibration 3. LC 3- Lesson 2.2 Choosing Columns and Mobile Phases 4. LC 4- Lesson 2.3 Troubleshooting LC systems 5. LC 5- Lesson 2.3 Evaluating Chromatograms 6. LC 6- Lesson 2.4 UV and Fluorescence Detectors 7. LC 7- Lesson 2.4 RI, ELSD, CAD, and MS Detectors

Quizzes	N/A
Format	Courses on DrugImpairment.com are offered in an asynchronous e-learning format. Each course consists of individual lessons and each lesson contains video-based instruction or a written learning assignment. Lessons are equipped with timers and activity monitoring for completion integrity. Certificates are granted upon completion of all lessons in a course and achieving satisfactory performance on any associated quizzes. Course learning hours are determined by run-time, with a minimum of 50 minutes required per credit hour.

Instructor Information	
Instructor Name	Makayla Chipka
Instructor Biography	Makayla J. Chipka, M.S. is an analytical chemist, laboratory consultant, and regulatory expert with extensive experience in drug of abuse analysis, forensic toxicology applications, and analytical method development. She holds a Master's degree in Analytical Chemistry and has built, validated, and managed analytical testing programs across both regulated consumer-product and forensic-adjacent environments. Makayla's technical background includes chromatographic method development and optimization, quantitative and qualitative data interpretation, regression analysis, internal standardization strategies, and validation of analytical methods for compliance, defensibility, and real-world application. Her work emphasizes translating complex analytical data into clear, actionable conclusions, particularly in high-stakes contexts where scientific accuracy and regulatory alignment are critical. In addition to her laboratory expertise, Makayla has led the establishment and expansion of ISO-aligned analytical laboratories, developed equipment and instrumentation roadmaps, and advised organizations on laboratory design, workflow optimization, and quality system implementation. Her consulting work frequently bridges the gap between laboratory science, regulatory requirements, and operational

	decision-making. Makayla currently provides expert consulting and training services through her independent practice, supporting organizations in analytical chemistry strategy, forensic testing programs, drug of abuse analysis frameworks, and laboratory readiness. She is recognized for her ability to educate technical and non-technical audiences alike, making complex analytical concepts approachable while maintaining scientific rigor.
ABFT Certified	Yes ☐ No ☒ Not Applicable ☐
POST Instructor	Yes ☐ No ☐ Not Applicable ☒
DRE	Yes ☐ No ☐ Not Applicable ☒
DRE Instructor	Yes ☐ No ☐ Not Applicable ☒