Lesson Catalog

This catalog lists all lessons currently available from SKILLPAD

Welcome to Skillpad's extensive catalog of e-Lessons, designed and built specifically for your industry.

SECTOR INDEX

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Finished Dose e-Lessons

Below is a list of e-Lessons targeted specifically to the Finished Dose pharmaceutical sector. If you would like to experience any of these e-Lessons, please contact us and we'll set up a tailored demonstration for you on our online Learning Management System.

This will allow you to gather stakeholders together to review both the e-Lessons and the proposed curriculum at one time. And, because it's available for review online, it is accessible from anywhere, allowing you to review from multiple sites and time zones.

'e-Learning that Builds Knowledge'

Pharmaceutical GMP - Basics

Code	Title	Description
PGB-1100	Overview of Pharmaceutical Manufacturing	Overview of pharmaceutical manufacturing, including how pharmaceutical products are brought to market, the types of products that can be manufactured, and the names and functions of the different departments typically found in a pharmaceutical manufacturing facility.
PGB-1101	GMP for Finished Dose Forms	GMP and how it applies in the manufacture of finished dose products, why it is important for safeguarding the end user, and the laws that govern it.
PGB-1102	Regulation of the Pharmaceutical Industry	Regulation of the pharmaceutical industry, how new drugs are approved, types of regulatory inspections, and the role of employees in inspections.
PGB-1203	Finished Dose Contamination Prevention	Overview of how finished dose products can be contaminated during production and how to minimize the risk of contamination through the use of PPE and good hygiene habits.
PGB-1204	Dress Codes for Finished Dose Manufacturing	Overview of dress codes, why they are needed, and how they are used in different areas of a finished dose facility.
PGB-1105	GMP Goals	Describes the GMP responsibilities of employers and employees and the importance of procedures and records.

Pharmaceutical GMP - Intermediate

Code	Title	Description
PGI-1100	SOPs in Finished Dose Manufacturing	Standard Operating Procedures (SOPs), why they are necessary, where they are used, the type of information they typically contain, and how they are controlled.
PGI-1101	Records in Finished Dose Manufacturing	Completion of records required for Finished Dose manufacture. Records include records of materials, production records, equipment records, laboratory records, production review and distribution records.
PGI-1110	Personnel and Training	GMP requirements concerning personnel, training, clothing, hygiene and health.
PGI-1220	Warehousing	Warehousing principles and practices including warehouse functions, GMP in the warehouse, and QC status for materials and products.
PGI-1230	Cleaning of Equipment	Overview of different equipment cleaning methods used in the pharmaceutical and biologics industries.
PGI-1240	Sampling	Different sampling techniques used for raw materials, manufactured materials, or final products in the pharmaceutical or biopharmaceutical industries. Also includes rules that should be followed when sampling materials.
PGI-1271	Primary Packaging	Principles of primary packaging and the processes involved.
PGI-1272	Secondary and Tertiary Packaging	Principles of secondary and tertiary packaging and the processes involved.
PGI-1280	Labeling	Labeling principles and procedures in a pharmaceutical manufacturing facility including the importance of accurate labeling, information contained on a label, and label distribution and reconciliation requirements.
PGI-1290	Buildings and Facilities	The GMP design requirements for a manufacturing facility including product flow, environmental controls, cleaning, sanitization, and maintenance.
SER-1100 PREMIUM LESSON	Serialization and Product Tracking	Overview of serialization and product tracking including the commercial and regulatory drivers, the technologies involved, and the process of implementing a serialization and product tracking solution.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.

Serialization

NOTE: These lessons form a Strategic Premium Suite and are sold as a group of 6 lessons

Code	Title	Description
SER-1101 PREMIUM LESSON	Four Level Serialization Structure	Overview of serialization architecture in the pharmaceutical industry. It describes the four levels of a serialization system and the IT functions associated with each.
SER-1102 PREMIUM LESSON	Serial Number Generation	Overview of how serial numbers are generated, how they are stored, and how they are assigned to medicinal products. GS1 standards are explained and how these standards, when used in conjunction with serial numbers, Global Trade Item Numbers (GTINs), and the Electronic Product Code Identification System (EPCIS), can be used to share information about serialized products across global markets.
SER-1103 PREMIUM LESSON	Serial Number Transmission	Overview of how serial numbers are transmitted between the different levels, how they arrive at their final destination, and how reconciliation is performed between the physical and digital formats of the numbers.
SER-1104 PREMIUM LESSON	Serialization - Aggregation and Error Management	Overview of the parent-child relationship between aggregated components created on a serialization packaging line (i.e., cartons, cases, and pallets), how errors can arise on a line, and strategies that can be used to minimize these errors.
SER-1105 PREMIUM LESSON	Serialization - Exception Events, Disaggregation, and Reaggregation	Overview of the types of exception events that can arise in serialization and packaging operations and how each should be processed, including use of the 'Mode 1-2-3' scanning method for disaggregation and reaggregation.
SER-1106 PREMIUM LESSON	Serialization and the Supply Chain	Overview of what happens to serialized products when they leave a regulated production facility, how change of ownership is accomplished, and how compliance with the DSCSA and DQSA is achieved.

Finished Dose - Process Understanding

Code	Title	Description
PUF-1201	Dosage Form Introduction	Overview of pharmaceutical dosage forms. The most common dosage forms are described including solids, liquids, aerosol inhalers, and transdermal patches, along with the mode of entry of each form into the body.
PUF-1202	Solid Dosage Forms	Overview of solid dosage forms, their advantages and disadvantages, the ingredients they typically contain, and the steps involved in their manufacture.
PUF-1203	Semisolid Dosage	Overview of semisolid dose products manufactured by the pharmaceutical industry, including their advantages and disadvantages, ingredients used, and the manufacturing steps involved.
PUF-1205	Aerosol Inhalers	Overview of aerosol inhalers, including their purpose, ingredients, advantages and disadvantages, typical components, and mode of operation.
PUF-1204	Liquid Dosage Forms	Overview of liquid dosage forms including liquid doses and suspensions. The advantages and disadvantages of liquid dosage forms are outlined followed by a description of the ingredients and methods typically used in the production of liquid doses and suspensions.
BPU-1113 PREMIUM LESSON	Freeze Drying in Biopharmaceutical Manufacturing	Overview of freeze drying, its use in biopharmaceutical manufacturing, the structure of a freeze dryer, and the freeze-drying process, including critical parameters, cycle phases, process monitoring and control.

Finished Dose Manufacturing - Equipment Understanding

Code	Title	Description
PEF-1202	Milling	Overview of milling operations, including different types of milling equipment and techniques, equipment control parameters and safety precautions.
PEF-1203	Blending	Overview of blending operations, including different types of blending equipment, equipment control parameters and safety precautions.
PEF-1204	Filtration for Finished Dose	Overview of filtration, how a plate and frame filter press operates, the equipment control parameters used, and the relevant safety precautions.
PEF-1205	Dryers	Overview of drying in the pharmaceutical industry, how a tray dryer is operated, and its associated control parameters and safety precautions.
PEF-1206	Fluidized Beds	Introduction to fluidized bed granulators and their use in the process of granulation. It describes the granulation process, operation of the fluidized bed equipment, relevant control parameters, and required safety precautions.
PEF-1207	Tablet Press	Overview of how a tablet press functions, key process control parameters, required in-process checks and associated safety considerations.
PEF-1208	Tablet Coater	Introduction to tablet coaters and their use in the process of tablet coating. It describes the purpose of coating, the equipment and process steps involved, critical process parameters, and required safety precautions.
PEF-1209	Kettles	Overview of kettles and their use in the manufacture of semisolid pharmaceutical products. It includes the critical parameters required for controlling a mixing process and the safety precautions that must be taken when working with kettles.

Finished Dose Manufacturing - Validation

Code	Title	Description
PVF-1130	Fundamentals of Process Validation	Introduction to process validation using the DQ, IQ, OQ and PQ phase approach. A case study of a tablet manufacturing process is presented. Includes validation masterplan, validation life cycle, specification, qualification and revalidation.

Water - Process Understanding

Code	Title	Description
PUA-1250	Water Types and Testing	The different grades of water typically used in a pharmaceutical manufacturing plant and the tests used to determine water purity.
PUA-1251	Water Impurities & Treatment	The most common types of contaminants found and the different treatment steps used to purify water before it can be used in a chemical process.

Aseptic Processing - Introduction

Code	Title	Description
PST-1200	Basic Microbiology	Introduction to microorganisms, the contamination threat they pose to products, and how products can be protected from this threat.
PST-1220	Isolators	Overview of how isolators are used in pharmaceutical and biologics processing, the different components of an isolator including transfer mechanisms and protective equipment, and how isolators can be cleaned and sanitized.
PST-1265	Cleanrooms - Rules, Control Parameters, and Testing	Overview of general cleanroom rules and the cleanroom parameters that are controlled, monitored, and tested in pharmaceutical and biologics facilities.
PST-1291	Moist Heat Sterilization - Autoclaves	Overview of moist heat (steam) sterilization via autoclaving, including the equipment used, critical process parameters, and the different stages of a sterilization cycle.

Aseptic Processing - Cleanroom GMP

Code	Title	Description
ASP-1101 PREMIUM LESSON	Aseptic Processing – Concepts and Controls	Explains why aseptic processing is used by providing an overview of microbial contamination and its effects on products. It describes how this contamination can be prevented by using controls and procedures that minimize bioburden in the manufacturing environment such as cleanrooms, gowning, appropriate behavior of personnel, and environmental monitoring.
ASP-1102 PREMIUM LESSON	Aseptic Processing - Cleanrooms and Control Technologies	Describes how cleanrooms are designed, constructed and operated to prevent contamination of products. This includes descriptions of HVAC and HEPA filters, unidirectional airflow, air locks, cleanroom architecture, pressure cascades and location of key equipment.
ASP-1103 PREMIUM LESSON	Aseptic Processing - Gowning	Overview of why and how gowning is used in Aseptic Processing, the different gowning requirements for different cleanroom classifications, the equipment used, and the procedures that are typically followed.
ASP-1104 PREMIUM LESSON	Aseptic Processing – Contamination Control	Overview of the contamination prevention measures, procedures, and practices that are typically implemented in aseptic processing including the use of cleanrooms, cleanroom gowning, cleanroom cleaning procedures, microbial testing, correct cleanroom behavior, and appropriate personal hygiene.
ASP-1105 PREMIUM LESSON	Aseptic Processing – Decontamination and Sterilization Technologies	Overview of methods typically used to decontaminate and sterilize equipment, consumables, containers/closures, and products as part of Aseptic Processing. Methods covered include moist heat, dry heat, hydrogen peroxide vapor, and filtration.
ASP-1106 PREMIUM LESSON	Working with Biosafety Cabinets	Fundamental principles of working with biosafety cabinets and specifically the role of Class II BSCs in contamination prevention. It includes airflow visualization, essential under EU GMP Annex 1 requirements, and provides the user with practical examples of the skills, best practices, and behaviors required when working with Class II BSCs.

Contamination Control Strategy - Annex 1 and QRM

Code	Title	Description
CCS-1101-SPL01-EN PREMIUM LESSON	Contamination Control Strategy – Annex 1 and QRM.	This module explains the 'why' behind Contamination Control Strategy (CCS) and Quality Risk Management (QRM) for all employees involved in sterile product manufacture. It provides a solid understanding of CCS and the holistic nature of contamination control, ultimately improving CCS design and implementation.
CCS-1102-SPL01-EN PREMIUM LESSON	Contamination Control Strategy - QRM in Practice	This module unlocks the 'how' of using Quality Risk Management (QRM) to successfully devise, implement, and maintain your facility's Contamination Control Strategy (CCS). Using the example of contamination control in a lyophilization process, the user explores and applies QRM steps, including risk analysis, risk control, and corrective action planning.

Aseptic Processing - Sterilization

Code	Title	Description
PST-1293	Sterile Filtration	Overview of how sterile filtration is used in the pharmaceutical and biologics industries and the equipment and operating parameters involved.
PST-1295	Gas Sterilization	Describes Gas Sterilization and the products that can be sterilized by this process. Also covers the equipment and procedures used and the critical sterilization parameters.

Regulatory GMP for Management

Code	Title	Description
RGM-1200	Executive Responsibility in Pharmaceutical Manufacturing	Overview of the regulatory responsibilities of executive management in the pharmaceutical manufacturing industry. It explains both FDA and legal requirements and the corporate and personal consequences of non-compliance.

Health and Safety - Laboratory

Code	Title	Description
PSY-1241	Laboratory Safe Work Practices	Explains how to work safely in a laboratory through use of Standard Operating Procedures, Safety Data Sheets and use of appropriate safety equipment. Safety considerations associated with common laboratory equipment are also outlined.
PSY-1260	Chemical Laboratory Waste	The different categories of chemical laboratory waste produced in a laboratory and the procedures for handling and storing this waste in a safe manner.

Health and Safety - Micro Laboratory

Code	Title	Description
PSY-1221	General Safety Hazards in the Microbiology Lab	Overview of the hazards associated with the different classes of microorganisms, as well as the precautions that must be taken during activities such as media preparation, handling and transportation of cultures, autoclaving, and the disposal of hazardous waste.

General - Computer Use & Validation

Code	Title	Description
GVC-1200	IT Use in Regulated Industries	Describes how Information Technology can be used in GMP-regulated industries, common threats to computer security and how they can be addressed, and some recommended good computer practices.
CSV-1101	GxP Computerized Systems Validation	Explains the fundamentals of computerized systems validation and the validation process as recommended in the GAMP® guideline. Also introduces the FDA-enforced 21 CFR Part 11 ruling on electronic records and signatures.
GVC-1202	Introduction to 21 CFR Part 11	Explains 21 CFR Part 11 in detail and its impact on regulated industries. Particular emphasis on electronic records and signatures (ERES).

Analytical Laboratory - GMP

Code	Title	Description
PGL-1200	Out of Specification and Atypical Results	Overview of out of specification and atypical results in the analytical laboratory, including how they can arise, how they can be investigated, and how they can be prevented.
PGL-1210	Laboratory GMP	GMP in the laboratory, from sample receipt, testing and recording of results to result approval.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.
PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

Analytical Laboratory - Validation

Code	Title	Description
PVL-1210	Method Validation Parameters	Overview of method validation in the analytical laboratory, including why it must be performed and the various parameters that must be examined.
PVL-1200	Laboratory Equipment Qualification	Overview of laboratory equipment qualification, why it is done, the stages and activities involved, and the key role of documentation and other support activities.

Analytical Laboratory - Lab Practices

Code	Title	Description
PPL-1200	Weighing	Laboratory weighing operations including types of balances typically used, pre-weighing checks, and recommended weighing procedures and precautions.
PPL-1201	Glassware	Explains how to choose the correct glassware for preparing and storing solutions in the laboratory, and how to read and use volumetric glassware correctly.
PPL-1202	Solution Preparation	Explains how to accurately prepare quantitative solutions from solids and liquids. This includes organization of work area, choosing correct grade of materials, quantitative transfer, dissolving solids and topping up.
PPL-1206	Wet Chemistry	Overview of wet chemistry techniques including use of pipettes and burettes, quantitative transfer of materials, and making dilutions.
PPL-1205	Instrumentation - Error Prevention	Overview of common errors associated with using spectrometry (AA, UV/VIS, IR) and pH measurement techniques and how these errors can be avoided.
PPL-1210	Understanding Dissolution	Overview of dissolution testing, including the factors that affect dissolution, and how a solid dosage drug form is absorbed into the bloodstream. 'In vivo' and 'in vitro' analyses are explained and typical in vitro dissolution tests are described.
PPL-1211	In Vitro Dissolution	Overview of how in vitro dissolution is performed in the laboratory. The various stages of the dissolution testing process are described along with the components of a dissolution apparatus and the equipment used for both manual and automatic sampling.
PPL-1212	Dissolution Equipment Set-Up	Overview of how solutions and equipment are prepared for a dissolution process. It includes the preparation of media and standards and typical dissolution apparatus set-up checks that are performed. Manual and automatic sampling operations are also included.
PPL-1213	Dissolution Testing	Overview of how dissolution testing is performed in practice. It includes setting of operational parameters, preparation and addition of dosage forms, sampling, generation and treatment of data, and checking of results against specifications. Criteria for retesting are also explained
PPL-1130 PREMIUM LESSON	Introduction to HPLC	Describes the basic theory and practice of HPLC. Particular focus is given to reverse phase HPLC. The components of a HPLC are described in detail and significant consideration is given to the explanation of results and peak shape. Analytical considerations of special relevance to HPLC are also presented.
PPL-1131 PREMIUM LESSON	HPLC Troubleshooting	Describes the troubleshooting of common HPLC equipment problems.

Microbiology Laboratory - Lab Practices

Code	Title	Description
PPM-1200	Principles of Good Aseptic Technique	The principles of good aseptic technique and how they are applied in microbiological testing.
PPM-1210	Basic Microbiological Techniques	The techniques frequently used in microbiology laboratories including media preparation, handling stock cultures, and pure culture techniques.
PPM-1211	Introduction to Microscopy	The role of microscopy in microbiology, including microscope components and functions, different lens types, and various microscopy techniques.
PPM-1212	Introduction to Staining	How to prepare and heat fix a smear correctly. Introduction to three main categories of staining i.e., simple, differential and structural.
PPM-1213	Staining Techniques	Overview of the techniques used to stain and identify organisms. The types of staining dyes used are detailed and a number of staining techniques are explored, namely Simple Staining, Negative Staining, Gram Staining, Acid-Fast Staining, and Spore Staining.
PPM-1230	Unknown Bacterial Identification	Introduces the concept of unknown bacterial contamination and the morphological and cultural tests carried out to identify these unknowns.

Microbiology Laboratory - GMP

Code	Title	Description
PGM-1200	GMP for Microbiology	The importance of GMP in a microbiology laboratory and the rules and guidelines for handling infectious material.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.
PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

Operational Excellence

Code	Title	Description
OPE-1101 PREMIUM LESSON	CAPA for Nonconformities	Overview of the key concepts and terminologies associated with nonconformities, and the CAPA methodology used to address them as part of a company's Quality System. Using a scenario-driven approach, the user is taken through the key steps of a CAPA process from identifying a problem to verifying the effectiveness of the solutions implemented to resolve it.
OPE-1102 PREMIUM LESSON	GMP Inspection Readiness - Interacting with the Inspector	Using a scenario-driven approach, the types of questions that are typically asked in a GMP inspection situation are detailed along with appropriate responses. Appropriate behaviors that should be exhibited by anyone interacting with an inspector are also explained and illustrated.
OPE-1103 PREMIUM LESSON	Error Reduction in GMP-Regulated Industries	Overview of errors and their impact on GMP-regulated environments, as well as the measures that can be taken to manage these errors and prevent their reoccurrence.

Active Pharmaceutical Ingredients e-Lessons

Below is a list of e-Lessons targeted specifically to the Active Pharmaceutical Ingredients [API] sector. If you would like to experience any of these e-Lessons, please contact us and we'll set up a tailored e-Lesson demonstration for you on our online Learning Management System.

This will allow you to gather stakeholders together to review both the e-Lessons and the proposed curriculum at one time. And, because it's available for review online, it is accessible from anywhere, allowing you to review from multiple sites and time zones.

'e-Learning that Builds Knowledge'

API Manufacturing - GMP Basics

Code	Title	Description
PGB-1100	Overview of Pharmaceutical Manufacturing	Overview of pharmaceutical manufacturing, including how pharmaceutical products are brought to market, the types of products that can be manufactured, and the names and functions of the different departments typically found in a pharmaceutical manufacturing facility.
BGB-1101	GMP for APIs	What GMP is and how it applies in the manufacture of active pharmaceutical ingredients, why it is important for safeguarding the end-user, and the laws that govern it.
PGB-1102	Regulation of the Pharmaceutical Industry	Regulation of the pharmaceutical industry, how new drugs are approved, types of regulatory inspections, and the role of employees in inspections.
BGB-1203	API Contamination Prevention	Describes how API products can be contaminated during production operations and how the risk of contamination can be minimized through the use of PPE, good hygiene habits, and good production practices.
BGB-1204	Dress Codes for APIs	Explains dress codes and why they are so important in the API Industry. Examples of the different types of clothing required for different tasks are given.

API Manufacturing - GMP Intermediate

Code	Title	Description
BGI-1100	SOPs in API Manufacturing	What an SOP is, why SOPs must be followed in API plants and what information they should contain.
BGI-1101	Records in API Manufacturing	Overview of records in API Manufacturing, why these records are essential, how and where they are used, and the type of information they typically contain.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.

Pharmaceutical GMP - Intermediate

Code	Title	Description
PGI-1110	Personnel and Training	Describes GMP requirements concerning personnel, training, clothing, hygiene, and health.
PGI-1220	Warehousing	Warehousing principles and practices including warehouse functions, GMP in the warehouse, and QC status for materials and products.
PGI-1230	Cleaning of Equipment	Overview of different equipment cleaning methods used in the pharmaceutical and biologics industries.
PGI-1280	Labeling	Overview of labeling principles and procedures in a pharmaceutical manufacturing facility including the importance of accurate labeling, information contained on a label, and label distribution and reconciliation requirements.
PGI-1290	Buildings and Facilities	The GMP design requirements for a manufacturing facility including product flow, environmental controls, cleaning, sanitization, and maintenance.
RGM-1200	Executive Responsibility in Pharmaceutical Manufacturing	Overview of the regulatory responsibilities of executive management in the pharmaceutical manufacturing industry. It explains both FDA and legal requirements and the corporate and personal consequences of non-compliance.
PEF-1209	Kettles	Overview of kettles and their use in the manufacture of semisolid pharmaceutical products. It includes the critical parameters required for controlling a mixing process and the safety precautions that must be taken when working with kettles.

API Manufacturing - Process Understanding

Code	Title	Description
PUA-1200	Chemical Reactions: Overview	Provides an overview of chemical reactions as well as the various process variables that must be controlled.
PUA-1201	Chemical Reactions: Properties	The main physical and chemical properties that are needed to monitor and control a chemical reaction.
PUA-1210	Distillation and Reflux	Introduction to the principles of distillation and reflux. The critical control parameters of each process are described and relevant safety issues are highlighted.
PUA-1220	Crystallization	Introduction to the principles of crystallization, the stages and variables involved in the crystallization process, as well as the actions that can be taken to resolve typical process issues.
PUA-1230	Drying	The importance of drying products in the API industry, as well as the different types of drying equipment, and the control parameters involved in the drying process.
PUA-1240	Filtration	Overview of the theory of filtration, the types of equipment used, and the key process parameters involved.
BPU-1113 PREMIUM LESSON	Freeze Drying in Biopharmaceutical Manufacturing	Overview of freeze drying, its use in biopharmaceutical manufacturing, the structure of a freeze dryer and the freeze-drying process, including critical parameters, cycle phases, process monitoring and control.
PUA-1250	Water Types & Testing	The different grades of water required in an API plant and the tests that are used to determine the water's purity.
PUA-1251	Water Impurities & Treatment	The most common types of contaminants found and the different treatment steps used to purify water before it can be used in a chemical process.
PUA-1260	Process Flow Diagrams (PFDs)	Symbols used to represent key process equipment, pipe-work and gauges and how to interpret basic PFDs.

API Manufacturing - Equipment Understanding

Code	Title	Description
PEA-1200	Chemical Reactor Design	How a chemical reactor works and the most important connections needed to carry out a chemical reaction.
PEA-1201	Working with Reactors	Explains the main tasks involved in operating a chemical reactor such as weighing, charging and taking samples.
PEA-1210	Centrifuges	The operating principles and parameters of Batch Filtering and Inverting Filter centrifuges are explained.
PEA-1240	Reciprocating Pumps	Overview of reciprocating pumps, their mode of operation, and how they can be used in pharmaceutical and biologics processing.
PEA-1241	Rotary & Centrifugal Pumps	Overview of rotary and centrifugal pumps, their modes of operation, and how they can be used in pharmaceutical processing.
PEA-1250	Valves	The different types of valves commonly used in a pharmaceutical manufacturing facility.

Manufacturing - Validation

Code	Title	Description
PVF-1130	Fundamentals of Process Validation	Introduction to process validation using the DQ, IQ, OQ and PQ phase approach. A case study of a tablet manufacturing process is presented. Includes validation masterplan, validation life cycle, specification, qualification and revalidation.

Health and Safety - Laboratory

Code	Title	Description
PSY-1241	Laboratory Safe Work Practices	Explains how to work safely in a laboratory through use of Standard Operating Procedures, Safety Data Sheets and use of appropriate safety equipment. Safety considerations associated with common laboratory equipment are also outlined.
PSY-1260	Chemical Laboratory Waste	The different categories of chemical laboratory waste produced in a laboratory and the procedures for handling and storing this waste in a safe manner.

Health and Safety - Micro Laboratory

Code	Title	Description
PSY-1221	General Safety Hazards in the Microbiology Lab	Overview of the hazards associated with the different classes of microorganisms, as well as the precautions that must be taken during activities such as media preparation, handling and transportation of cultures, autoclaving, and the disposal of hazardous waste.

General - Computer Use & Validation

Code	Title	Description
GVC-1200	IT Use in Regulated Industries	Describes how Information Technology can be used in GMP-regulated industries, common threats to computer security and how they can be addressed, and some recommended good computer practices.
CSV-1101	GxP Computerized Systems Validation	Explains the fundamentals of computerized systems validation and the validation process as recommended in the GAMP® guideline. Also introduces the FDA-enforced 21 CFR Part 11 ruling on electronic records and signatures.
GVC-1202	Introduction to 21 CFR Part 11	Explains 21 CFR Part 11 in detail and its impact on regulated industries. Particular emphasis on electronic records and signatures (ERES).

Analytical Laboratory - GMP

Code	Title	Description
PGL-1200	Out of Specification and Atypical Results	Overview of out of specification and atypical results in the analytical laboratory, including how they can arise, how they can be investigated, and how they can be prevented.
PGL-1210	Laboratory GMP	GMP in the laboratory, from sample receipt, testing and recording of results to result approval.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.
PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

Analytical Laboratory - Validation

Code	Title	Description
PVL-1200	Laboratory Equipment Qualification	Overview of laboratory equipment qualification, why it is done, the stages and activities involved, and the key role of documentation and other support activities.
PVL-1210	Method Validation Parameters	Overview of method validation in the analytical laboratory, including why it must be performed and the various parameters that must be examined.

Analytical Laboratory - Lab Practices

Code	Title	Description
PPL-1200	Weighing	Laboratory weighing operations including types of balances typically used, pre-weighing checks, and recommended weighing procedures and precautions.
PPL-1201	Glassware	Explains how to choose the correct glassware for preparing and storing solutions in the laboratory, and how to read and use volumetric glassware correctly.
PPL-1202	Solution Preparation	How to accurately prepare quantitative solutions from solids and liquids. This includes organization of work area, choosing correct grade of materials, quantitative transfer, dissolving solids and topping up.
PPL-1206	Wet Chemistry	Overview of wet chemistry techniques including use of pipettes and burettes, quantitative transfer of materials, and making dilutions.
PPL-1210	Understanding Dissolution	Overview of dissolution testing, including the factors that affect dissolution, and how a solid dosage drug form is absorbed into the bloodstream. 'In vivo' and 'in vitro' analyses are explained and typical in vitro dissolution tests are described.
PPL-1211	In Vitro Dissolution	Overview of how in vitro dissolution is performed in the laboratory. The various stages of the dissolution testing process are described along with the components of a dissolution apparatus and the equipment used for both manual and automatic sampling.
PPL-1212	Dissolution Equipment Set-Up	Overview of how solutions and equipment are prepared for a dissolution process. It includes the preparation of media and standards and typical dissolution apparatus set-up checks that are performed. Manual and automatic sampling operations are also included.
PPL-1213	Dissolution Testing	Overview of how dissolution testing is performed in practice. It includes setting of operational parameters, preparation and addition of dosage forms, sampling, generation and treatment of data, and checking of results against specifications. Criteria for retesting are also explained
PPL-1130 PREMIUM LESSON	Introduction to HPLC	Describes the basic theory and practice of HPLC. Particular focus is given to reverse phase HPLC. The components of a HPLC are described in detail and significant consideration is given to the explanation of results and peak shape. Analytical considerations of special relevance to HPLC are also presented.
PPL-1131 PREMIUM LESSON	HPLC Troubleshooting	Describes the troubleshooting of common HPLC equipment problems.

Microbiology Laboratory - Lab Practices

Code	Title	Description
PPM-1200	Principles of Good Aseptic Technique	The principles of good aseptic technique and how they are applied in microbiological testing.
PPM-1210	Basic Microbiological Techniques	The techniques frequently used in microbiology laboratories including media preparation, handling stock cultures, and pure culture techniques.
PPM-1211	Introduction to Microscopy	The role of microscopy in microbiology, including microscope components and functions, different lens types, and various microscopy techniques.
PPM-1212	Introduction to Staining	How to prepare and heat fix a smear correctly. Introduction to three main categories of staining, i.e., simple, differential, and structural.
PPM-1213	Staining Techniques	Overview of the techniques used to stain and identify organisms. The types of staining dyes used are detailed and a number of staining techniques are explored, namely Simple Staining, Negative Staining, Gram Staining, Acid-Fast Staining, and Spore Staining.
PPM-1230	Unknown Bacterial Identification	An overview of the laboratory techniques commonly used to determine the morphological and cultural characteristics of unknown bacteria.

Microbiology Laboratory - GMP

Code	Title	Description
PGM-1200	GMP for Microbiology	The importance of GMP in a microbiology laboratory and the rules and guidelines for handling infectious material.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

Operational Excellence

Code	Title	Description
OPE-1101 PREMIUM LESSON	CAPA for Nonconformities	Overview of the key concepts and terminologies associated with nonconformities, and the CAPA methodology used to address them as part of a company's Quality Management System. Using a scenario-driven approach, the user is taken through the key steps of a CAPA process from identifying a problem to verifying the effectiveness of the solutions implemented to resolve it.
OPE-1102 PREMIUM LESSON	GMP Inspection Readiness - Interacting with the Inspector	Using a scenario-driven approach, the types of questions that are typically asked in a GMP inspection situation are detailed along with appropriate responses. Appropriate behaviors that should be exhibited by anyone interacting with an inspector are also explained and illustrated.
OPE-1103 PREMIUM LESSON	Error Reduction in GMP-Regulated Industries	Overview of errors and their impact on GMP-regulated environments, as well as the measures that can be taken to manage these errors and prevent their reoccurrence.

Biopharmaceutical e-Lessons

Below is a list of e-Lessons targeted specifically to the Biopharmaceutical sector including manufacturing of therapeutics, vaccines, and diagnostics. If you would like to experience any of these e-Lessons, please contact us and we'll set up a tailored e-Lesson demonstration for you on our online Learning Management System.

This will allow you to gather stakeholders together to review both the e-Lessons and the proposed curriculum at one time. And, because it's available for review online, it is accessible from anywhere, allowing you to review from multiple sites and time zones.

'e-Learning that Builds Knowledge'

Biotechnology & Biopharmaceuticals - Fundamentals

Code	Title	Description
BPU-1100 PREMIUM LESSON	Biotechnology and Biopharmaceuticals -	Introduces biopharmaceuticals and their product characteristics. An easy-to-understand explanation of the science of biotechnology that underlies biopharmaceuticals is provided. This includes the role of DNA and proteins in the body, along with an explanation of Recombinant DNA Technology and Monoclonal Antibody Technology. The characteristics of biopharmaceutical products are explored and compared to traditional small molecule pharmaceuticals, and the main types of products described.
BPU-1108 PREMIUM LESSON	Cell Biology and Recombinant DNA Technology	Following on from BPU-1100, this Lesson goes a level deeper in its explanation of cell biology and how cells can be manipulated to produce therapeutic proteins. An overview is provided of the functioning of mammalian cells, followed by an explanation of the roles played by DNA and RNA in producing proteins in cells. The steps involved in recombinant DNA technology are outlined, including DNA amplification, insertion of target genes into suitable vectors, before cell culturing is explained.

Biopharmaceuticals - Manufacturing - The Big Picture

Code	Title	Description
BPU-1105 PREMIUM LESSON	Overview of Biopharmaceutical Manufacturing	Explains the principles of biopharmaceutical manufacturing by focusing on the processes typically involved in producing therapeutic proteins. The stages of manufacture from upstream, through downstream, to formulation and fill finish are shown, with explanations of the equipment and processes involved. Key concepts of GMP, environmental control, and cleaning are covered.
BPU-1114 PREMIUM LESSON Features Immersive 360° Interactivity	Biopharmaceutical Manufacturing using Single-Use Technologies	Uses a generic monoclonal antibody production process and immersive 360° interactivity to provide a foundation knowledge of single use systems and how they are used in the manufacture of biopharmaceutical products.
BPU-1115 PREMIUM LESSON	ATMP Manufacturing – Cell and Gene Therapies	Overview of the nature and function of cell and gene therapy products, their modes of manufacture (with a particular focus on autologous and allogeneic therapies), and the associated technical challenges and regulatory requirements.

Upstream Biopharmaceutical Manufacturing

Code	Title	Description
BPU-1104 PREMIUM LESSON	Upstream Processing: Bioreactors in Bioprocessing	Describes the function, design, set-up and control of bioreactors in the biopharmaceutical industry. It examines control parameters such as heat management, pH, oxygen, mass transfer, and agitation, and how the type of cells being produced impacts on bioreactor set up and control. It also introduces the meaning of sterility, and bioreactor cleaning using CIP.
BPU-1106 PREMIUM LESSON	Fermentation in Biopharmaceutical Manufacturing	Describes how microorganisms are used in fermentation processes as part of biopharmaceutical manufacturing. Areas covered include growth phases and characteristics and conditions, cell banks, media, bioreactors and modes of operation, and the importance of sterility.
BPU-1107 PREMIUM LESSON	Cell Culture in Biopharmaceutical Manufacturing	Describes mammalian cell culture in the biopharmaceutical industry, how such cultures are controlled and important considerations in maintaining optimal cultures.
BPU-1101 PREMIUM LESSON	Clean In Place	Explains key concepts of Clean In Place (CIP) technology commonly used in the biotechnology and pharmaceutical industries. It describes CIP processes and procedures and provides examples of best practices that help ensure optimum performance.
BPU-1114 PREMIUM LESSON	Biopharmaceutical Manufacturing using Single-Use Technologies	An overview of single-use technologies and how they are used in the manufacture of biopharmaceutical products is provided using a generic monoclonal antibody production process and immersive 360° Interactivity.
BPU-1115 PREMIUM LESSON	ATMP Manufacturing – Cell and Gene Therapies	Overview of the nature and function of cell and gene therapy products, their modes of manufacture (with a particular focus on autologous and allogeneic therapies), and the associated technical challenges and regulatory requirements.

Downstream Biopharmaceutical Manufacturing

Code	Title	Description
BPU-1101 PREMIUM LESSON	Clean In Place	Explains key concepts of Clean In Place (CIP) technology commonly used in the biotechnology and pharmaceutical industries. It describes CIP processes and procedures and provides examples of best practices that help ensure optimum performance.
BPU-1102 PREMIUM LESSON	Downstream Processing: Ultrafiltration and Diafiltration	Describes the downstream manufacturing processes of ultrafiltration and diafiltration with an emphasis on post-harvest volume reduction and concentration for therapeutic protein products. The components of an UF/DF skid and control of the UF/DF process are also described.
BPU-1103 PREMIUM LESSON	Downstream Processing: Centrifugation	Describes what centrifugation is and the stages of biopharmaceutical downstream processing it can be used. Primary cell separation using a Disk Stack Centrifuge, and final purification using Ultracentrifugation are explained both in terms of equipment and process.
BPU-1110 PREMIUM LESSON	Downstream Processing: Protein Purification - Chromatography	Describes the use of various chromatographic methods in downstream protein purification including size exclusion, ion exchange, hydrophobic interaction and affinity chromatographies. The basics of a chromatography set-up are covered along with critical factors affecting protein separation such as column packing, resolution, column capacity, pressure and the gel matrix.
BPU-1114 PREMIUM LESSON	Biopharmaceutical Manufacturing using Single-Use Technologies	An overview of single-use technologies and how they are used in the manufacture of biopharmaceutical products is provided using a generic monoclonal antibody production process and immersive 360° Interactivity.
BPU-1115 PREMIUM LESSON	ATMP Manufacturing – Cell and Gene Therapies	Overview of the nature and function of cell and gene therapy products, their modes of manufacture (with a particular focus on autologous and allogeneic therapies), and the associated technical challenges and regulatory requirements.

Process Validation for Biopharmaceuticals

Code	Title	Description
BPU-1111-SPL06-EN PREMIUM LESSON	Process Validation: Process Design	Overview of the process design stage of process validation, describing how a biopharmaceutical manufacturing process can be defined using a Quality by Design (QbD) approach that emphasizes accumulated scientific knowledge and quality risk management.
BPU-1112 PREMIUM LESSON	Process Validation: Process Qualification and Control	Overview of the qualification and continuing verification stages of process validation, intended to demonstrate that a biopharmaceutical process is capable of reproducible commercial manufacturing and to provide ongoing assurance that the process remains in a state of control.

Biopharmaceutical Formulation & Freeze Drying

Code	Title	Description
BPU-1109 PREMIUM LESSON	Formulation in the Biopharmaceutical Industry	Overview of the principles and practices of formulation and packaging processes in a modern biopharmaceutical manufacturing facility.
BPU-1113 PREMIUM LESSON	Freeze Drying in Biopharmaceutical Manufacturing	Overview of freeze drying, its use in biopharmaceutical manufacturing, the structure of a freeze dryer and the freeze-drying process, including critical parameters, cycle phases, process monitoring and control.

Aseptic Processing - Introduction

Code	Title	Description
PST-1200	Basic Microbiology	Introduction to microorganisms, the contamination threat they pose to products, and how products can be protected from this threat.
PST-1220	Isolators	How isolators are used in pharmaceutical and biologics processing, the different components of an isolator including transfer mechanisms and protective equipment, and how isolators can be cleaned and sanitized.

Aseptic Processing - Cleanroom GMP

Code	Title	Description
ASP-1101 PREMIUM LESSON	Aseptic Processing – Concepts and Controls	Explains why aseptic processing is used by providing an overview of microbial contamination and its effects on products. It describes how this contamination can be prevented by using controls and procedures that minimize bioburden in the manufacturing environment such as cleanrooms, gowning, appropriate behavior of personnel, and environmental monitoring.
ASP-1102 PREMIUM LESSON	Aseptic Processing - Cleanrooms and Control Technologies	Describes how cleanrooms are designed, constructed and operated to prevent contamination of products. This includes descriptions of HVAC and HEPA filters, unidirectional airflow, air locks, cleanroom architecture, pressure cascades and location of key equipment.
ASP-1103 PREMIUM LESSON	Aseptic Processing - Gowning	Overview of why and how gowning is used in Aseptic Processing, the different gowning requirements for different cleanroom classifications, the equipment used, and the procedures that are typically followed.
ASP-1104 PREMIUM LESSON	Aseptic Processing – Contamination Control	Overview of the contamination prevention measures, procedures, and practices that are typically implemented in aseptic processing including the use of cleanrooms, cleanroom gowning, cleanroom cleaning procedures, microbial testing, correct cleanroom behavior, and appropriate personal hygiene.
ASP-1105 PREMIUM LESSON	Aseptic Processing – Decontamination and Sterilization Technologies	Overview of methods typically used to decontaminate and sterilize equipment, consumables, containers/closures, and products as part of Aseptic Processing. Methods covered include moist heat, dry heat, hydrogen peroxide vapor, and filtration.

ASP-1106 PREMIUM LESSON	Working with Biosafety Cabinets	Fundamental principles of working with biosafety cabinets and specifically the role of Class II BSCs in contamination prevention. It includes airflow visualization, essential under EU GMP Annex 1 requirements, and provides the user with practical examples of the skills, best practices, and behaviors required when working with Class II BSCs.

Contamination Control Strategy - Annex 1 and QRM

Code	Title	Description
CCS-1101-SPL01-EN PREMIUM LESSON	Contamination Control Strategy – Annex 1 and QRM.	This module explains the 'why' behind Contamination Control Strategy (CCS) and Quality Risk Management (QRM) for all employees involved in sterile product manufacture. It provides a solid understanding of CCS and the holistic nature of contamination control, ultimately improving CCS design and implementation.
CCS-1102-SPL01-EN PREMIUM LESSON	Contamination Control Strategy - QRM in Practice	This module unlocks the 'how' of using Quality Risk Management (QRM) to successfully devise, implement, and maintain your facility's Contamination Control Strategy (CCS). Using the example of contamination control in a lyophilization process, the user explores and applies QRM steps, including risk analysis, risk control, and corrective action planning.

Aseptic Processing - Sterilization

Code	Title	Description
PST-1293	Sterile Filtration	Overview of how sterile filtration is used in the pharmaceutical and biologics industries and the equipment and operating parameters involved.
PST-1295	Gas Sterilization	Describes gas sterilization using ethylene oxide and the products that can be sterilized by this process. Also covers the equipment and procedures used and the critical sterilization parameters.

Health and Safety - Laboratory

Code	Title	Description
PSY-1241	Laboratory Safe Work Practices	Explains how to work safely in a laboratory through use of Standard Operating Procedures, Safety Data Sheets and use of appropriate safety equipment. Safety considerations associated with common laboratory equipment are also outlined.
PSY-1260	Chemical Laboratory Waste	The different categories of chemical laboratory waste produced in a laboratory and the procedures for handling and storing this waste in a safe manner.

Health and Safety - Micro Laboratory

Code	Title	Description
PSY-1221	General Safety Hazards in the Microbiology Lab	Overview of the hazards associated with the different classes of microorganisms, as well as the precautions that must be taken during activities such as media preparation, handling and transportation of cultures, autoclaving, and the disposal of hazardous waste.

General - Computer Use & Validation

Code	Title	Description
GVC-1200	IT Use in Regulated Industries	Describes how Information Technology can be used in GMP-regulated industries, common threats to computer security and how they can be addressed, and some recommended good computer practices.
CSV-1101	GxP Computerized Systems Validation	Explains the fundamentals of computerized systems validation and the validation process as recommended in the GAMP® guideline. Also introduces the FDA-enforced 21 CFR Part 11 ruling on electronic records and signatures.
GVC-1202	Introduction to 21 CFR Part 11	Explains 21 CFR Part 11 in detail and its impact on regulated industries. Particular emphasis on electronic records and signatures (ERES).

Analytical Laboratory - GMP

Code	Title	Description
PGL-1200	Out of Specification and Atypical Results	Overview of out of specification and atypical results in the analytical laboratory, including how they can arise, how they can be investigated, and how they can be prevented.
PGL-1210	Laboratory GMP	GMP in the laboratory, from sample receipt, testing and recording of results to result approval.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.
PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

Analytical Laboratory - Validation

Code	Title	Description
PVL-1200	Laboratory Equipment Qualification	Overview of laboratory equipment qualification, why it is done, the stages and activities involved, and the key role of documentation and other support activities.
PVL-1210	Method Validation Parameters	Overview of method validation in the analytical laboratory, including why it must be performed and the various parameters that must be examined.

Analytical Laboratory - Lab Practices

Code	Title	Description
PPL-1200	Weighing	Laboratory weighing operations including types of balances typically used, pre-weighing checks, and recommended weighing procedures and precautions.
PPL-1201	Glassware	Explains how to choose the correct glassware for preparing and storing solutions in the laboratory, and how to read and use volumetric glassware correctly.
PPL-1202	Solution Preparation	How to accurately prepare quantitative solutions from solids and liquids. This includes organization of work area, choosing correct grade of materials, quantitative transfer, dissolving solids and topping up.
PPL-1206	Wet Chemistry	Overview of wet chemistry techniques including use of pipettes and burettes, quantitative transfer of materials, and making dilutions.
PPL-1210	Understanding Dissolution	Overview of dissolution testing, including the factors that affect dissolution, and how a solid dosage drug form is absorbed into the bloodstream. 'In vivo' and 'in vitro' analyses are explained and typical in vitro dissolution tests are described.
PPL-1211	In Vitro Dissolution	Overview of how in vitro dissolution is performed in the laboratory. The various stages of the dissolution testing process are described along with the components of a dissolution apparatus and the equipment used for both manual and automatic sampling.

PPL-1212	Dissolution Equipment Set-Up	Overview of how solutions and equipment are prepared for a dissolution process. It includes the preparation of media and standards and typical dissolution apparatus set-up checks that are performed. Manual and automatic sampling operations are also included.
PPL-1213	Dissolution Testing	Overview of how dissolution testing is performed in practice. It includes setting of operational parameters, preparation and addition of dosage forms, sampling, generation and treatment of data, and checking of results against specifications. Criteria for retesting are also explained
PPL-1130 PREMIUM LESSON	Introduction to HPLC	Describes the basic theory and practice of HPLC. Particular focus is given to reverse phase HPLC. The components of a HPLC are described in detail and significant consideration is given to the explanation of results and peak shape. Analytical considerations of special relevance to HPLC are also presented.
PPL-1131 PREMIUM LESSON	HPLC Troubleshooting	Describes the troubleshooting of common HPLC equipment problems.

Microbiology Laboratory - Lab Practices

Code	Title	Description
PPM-1200	Principles of Good Aseptic Technique	The principles of good aseptic technique and how they are is applied in microbiological testing.
PPM-1210	Basic Microbiological Techniques	The techniques frequently used in microbiology laboratories including media preparation, handling stock cultures, and pure culture techniques.
PPM-1211	Introduction to Microscopy	The role of microscopy in microbiology, including microscope components and functions, different lens types, and various microscopy techniques.
PPM-1212	Introduction to Staining	How to prepare and heat fix a smear correctly. Introduction to three main categories of staining i.e., simple, differential, and structural.
PPM-1213	Staining Techniques	Overview of the techniques used to stain and identify organisms. The types of staining dyes used are detailed and a number of staining techniques are explored, namely Simple Staining, Negative Staining, Gram Staining, Acid-Fast Staining, and Spore Staining.
PPM-1230	Unknown Bacterial Identification	An overview of the laboratory techniques commonly used to determine the morphological and cultural characteristics of unknown bacteria.

Microbiology Laboratory - GMP

Code	Title	Description
PGM-1200	GMP for Microbiology	The importance of GMP in a microbiology laboratory and the rules and guidelines for handling infectious material.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.

Operational Excellence

Code	Title	Description
OPE-1101 PREMIUM LESSON	CAPA for Nonconformities	Overview of the key concepts and terminologies associated with nonconformities, and the CAPA methodology used to address them as part of a company's Quality Management System. Using a scenario-driven approach, the user is taken through the key steps of a CAPA process from identifying a problem to verifying the effectiveness of the solutions implemented to resolve it.
OPE-1102 PREMIUM LESSON	GMP Inspection Readiness - Interacting with the Inspector	Using a scenario-driven approach, the types of questions that are typically asked in a GMP inspection situation are detailed along with appropriate responses. Appropriate behaviors

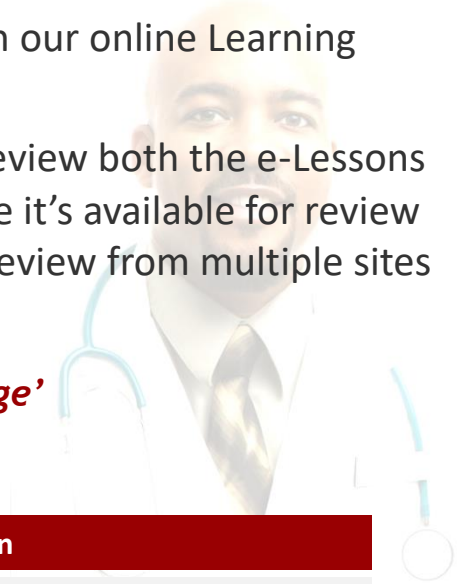
		that should be exhibited by anyone interacting with an inspector are also explained and illustrated.
OPE-1103 PREMIUM LESSON	Error Reduction in GMP-Regulated Industries	Overview of errors and their impact on GMP-regulated environments, as well as the measures that can be taken to manage these errors and prevent their reoccurrence.

Medical Device e-Lessons

Below is a list of e-Lessons targeted specifically to the Medical Devices sector. If you would like to experience any of these e-Lessons, please contact us and we'll set up a tailored e-Lesson demonstration for you on our online Learning Management System.

This will allow you to gather stakeholders together to review both the e-Lessons and the proposed curriculum at one time. And, because it's available for review online, it is accessible from anywhere, allowing you to review from multiple sites and time zones.

'e-Learning that Builds Knowledge'



Operational Excellence

Code	Title	Description
OPE-1101 PREMIUM LESSON	CAPA for Nonconformities	Overview of the key concepts and terminologies associated with nonconformities, and the CAPA methodology used to address them as part of a company's Quality Management System. Using a scenario-driven approach, the user is taken through the key steps of a CAPA process from identifying a problem to verifying the effectiveness of the solutions implemented to resolve it.
OPE-1102 PREMIUM LESSON	GMP Inspection Readiness - Interacting with the Inspector	Using a scenario-driven approach, the types of questions that are typically asked in a GMP inspection situation are detailed along with appropriate responses. Appropriate behaviors that should be exhibited by anyone interacting with an inspector are also explained and illustrated.
OPE-1103 PREMIUM LESSON	Error Reduction in GMP-Regulated Industries	Overview of errors and their impact on GMP-regulated environments, as well as the measures that can be taken to manage these errors and prevent their reoccurrence.

GMP - Intermediate

Code	Title	Description
PGI-1220	Warehousing	Warehousing principles and practices including warehouse functions, GMP in the warehouse, and QC status for materials and products.
PGI-1271	Primary Packaging	Principles of primary packaging and the processes involved.
PGI-1272	Secondary and Tertiary Packaging	Principles of secondary and tertiary packaging and the processes involved.
PGI-1280	Labeling	Overview of labeling principles and procedures in a GMP-regulated manufacturing facility including the importance of accurate labeling, information contained on a label, and label distribution and reconciliation requirements.
PGI-1290	Buildings and Facilities	The GMP design requirements for a manufacturing facility including product flow, environmental controls, cleaning, sanitization, and maintenance.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.

Serialization

NOTE: These lessons form a Strategic Premium Suite and are sold as a group of 6 lessons

Code	Title	Description
SER-1100 PREMIUM LESSON	Serialization and Product Tracking	Overview of serialization and product tracking including the commercial and regulatory drivers, the technologies involved, and the process of implementing a serialization and product tracking solution.
SER-1101 PREMIUM LESSON	Four Level Serialization Structure	Overview of serialization architecture in the pharmaceutical industry. It describes the four levels of a serialization system and the IT functions associated with each.
SER-1102 PREMIUM LESSON	Serial Number Generation	Overview of how serial numbers are generated, how they are stored, and how they are assigned to medicinal products. GS1 standards are explained and how these standards, when used in conjunction with serial numbers, Global Trade Item Numbers (GTINs), and the Electronic Product Code Identification System (EPCIS), can be used to share information about serialized products across global markets.
SER-1103 PREMIUM LESSON	Serial Number Transmission	Overview of how serial numbers are transmitted between the different levels, how they arrive at their final destination, and how reconciliation is performed between the physical and digital formats of the numbers.
SER-1104 PREMIUM LESSON	Serialization - Aggregation and Error Management	Overview of the parent-child relationship between aggregated components created on a serialization packaging line (i.e., cartons, cases, and pallets), how errors can arise on a line, and strategies that can be used to minimize these errors.
SER-1105 PREMIUM LESSON	Serialization - Exception Events, Disaggregation, and Reaggregation	Overview of the types of exception events that can arise in serialization and packaging operations and how each should be processed, including use of the 'Mode 1-2-3' scanning method for disaggregation and reaggregation.
SER-1106 PREMIUM LESSON	Serialization and the Supply Chain	Overview of what happens to serialized products when they leave a regulated production facility, how change of ownership is accomplished, and how compliance with the DSCSA and DQSA is achieved.

Aseptic Processing - Introduction

Code	Title	Description
PST-1200	Basic Microbiology	Introduction to microorganisms, the contamination threat they pose to products, and how products can be protected from this threat.
PST-1220	Isolators	Overview of how isolators are used in pharmaceutical and biologics processing, the different components of an isolator including transfer mechanisms and protective equipment, and how isolators can be cleaned and sanitized.

Aseptic Processing - Sterilization

Code	Title	Description
PST-1293	Sterile Filtration	Overview of how sterile filtration is used in the pharmaceutical and biologics industries and the equipment and operating parameters involved.
PST-1295	Gas Sterilization	Describes Gas Sterilization and the products that can be sterilized by this process. Also covers the equipment and procedures used and the critical sterilization parameters.

Aseptic Processing - Cleanroom GMP

Code	Title	Description
ASP-1101 PREMIUM LESSON	Aseptic Processing – Concepts and Controls	Explains why aseptic processing is used by providing an overview of microbial contamination and its effects on products. It describes how this contamination can be prevented by using controls and procedures that minimize bioburden in the manufacturing environment such as cleanrooms, gowning, appropriate behavior of personnel, and environmental monitoring.
ASP-1102 PREMIUM LESSON	Aseptic Processing - Cleanrooms and Control Technologies	Describes how cleanrooms are designed, constructed and operated to prevent contamination of products. This includes descriptions of HVAC and HEPA filters, unidirectional airflow, air locks, cleanroom architecture, pressure cascades and location of key equipment.
ASP-1103 PREMIUM LESSON	Aseptic Processing - Gowning	Overview of why and how gowning is used in Aseptic Processing, the different gowning requirements for different cleanroom classifications, the equipment used, and the procedures that are typically followed.
ASP-1104 PREMIUM LESSON	Aseptic Processing – Contamination Control	Overview of the contamination prevention measures, procedures, and practices that are typically implemented in aseptic processing including the use of cleanrooms, cleanroom gowning, cleanroom cleaning procedures, microbial testing, correct cleanroom behavior, and appropriate personal hygiene.
ASP-1105 PREMIUM LESSON	Aseptic Processing – Decontamination and Sterilization Technologies	Overview of methods typically used to decontaminate and sterilize equipment, consumables, containers/closures, and products as part of Aseptic Processing. Methods covered include moist heat, dry heat, hydrogen peroxide vapor, and filtration.
ASP-1106 PREMIUM LESSON	Working with Biosafety Cabinets	Fundamental principles of working with biosafety cabinets and specifically the role of Class II BSCs in contamination prevention. It includes airflow visualization, essential under EU GMP Annex 1 requirements, and provides the user with practical examples of the skills, best practices, and behaviors required when working with Class II BSCs.

Contamination Control Strategy - Annex 1 and QRM.

Code	Title	Description
CCS-1101-SPL01-EN PREMIUM LESSON	Contamination Control Strategy – Annex 1 and QRM.	This module explains the 'why' behind Contamination Control Strategy (CCS) and Quality Risk Management (QRM) for all employees involved in sterile product manufacture. It provides a solid understanding of CCS and the holistic nature of contamination control, ultimately improving CCS design and implementation.
CCS-1102-SPL01-EN PREMIUM LESSON	Contamination Control Strategy - QRM in Practice	This module unlocks the 'how' of using Quality Risk Management (QRM) to successfully devise, implement, and maintain your facility's Contamination Control Strategy (CCS). Using the example of contamination control in a lyophilization process, the user explores and applies QRM steps, including risk analysis, risk control, and corrective action planning.

Health and Safety - Laboratory

Code	Title	Description
PSY-1241	Laboratory Safe Work Practices	Explains how to work safely in a laboratory through use of Standard Operating Procedures, Safety Data Sheets and use of appropriate safety equipment. Safety considerations associated with common laboratory equipment are also outlined.
PSY-1260	Chemical Laboratory Waste	The different categories of chemical laboratory waste produced in a laboratory and the procedures for handling and storing this waste in a safe manner.

Health and Safety - Micro Laboratory

Code	Title	Description
PSY-1221	General Safety Hazards in the Microbiology Lab	Overview of the hazards associated with the different classes of microorganisms, as well as the precautions that must be taken during activities such as media preparation, handling and transportation of cultures, autoclaving, and the disposal of hazardous waste.

General - Computer Use and Validation

Code	Title	Description
GVC-1200	IT Use in Regulated Industries	Describes how Information Technology can be used in GMP-regulated industries, common threats to computer security and how they can be addressed, and some recommended good computer practices.
CSV-1101	GxP Computerized Systems Validation	Explains the fundamentals of computerized systems validation and the validation process as recommended in the GAMP® guideline. Also introduces the FDA-enforced 21 CFR Part 11 ruling on electronic records and signatures.
GVC-1202	Introduction to 21 CFR Part 11	Explains 21 CFR Part 11 in detail and its impact on regulated industries. Particular emphasis on electronic records and signatures (ERES).

Analytical Laboratory - GMP

Code	Title	Description
PGL-1200	Out of Specification and Atypical Results	Overview of out of specification and atypical results in the analytical laboratory, including how they can arise, how they can be investigated, and how they can be prevented.
PGL-1210	Laboratory GMP	GMP in the laboratory, from sample receipt, testing and recording of results to result approval.
PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

Analytical Laboratory - Lab Practices

Code	Title	Description
PPL-1200	Weighing	Laboratory weighing operations including types of balances typically used, pre-weighing checks, and recommended weighing procedures and precautions.
PPL-1201	Glassware	Explains how to choose the correct glassware for preparing and storing solutions in the laboratory, and how to read and use volumetric glassware correctly.
PPL-1202	Solution Preparation	How to accurately prepare quantitative solutions from solids and liquids. This includes organization of work area, choosing correct grade of materials, quantitative transfer, dissolving solids and topping up.
PPL-1130 PREMIUM LESSON	Introduction to HPLC	Describes the basic theory and practice of HPLC. Particular focus is given to reverse phase HPLC. The components of a HPLC are described in detail and significant consideration is given to the explanation of results and peak shape. Analytical considerations of special relevance to HPLC are also presented.
PPL-1131 PREMIUM LESSON	HPLC Troubleshooting	Describes the troubleshooting of common HPLC equipment problems.

Analytical Laboratory - Validation

Code	Title	Description
PVL-1210	Method Validation Parameters	Overview of method validation in the analytical laboratory, including why it must be performed and the various parameters that must be examined.
PVL-1200	Laboratory Equipment Qualification	Overview of laboratory equipment qualification, why it is done, the stages and activities involved, and the key role of documentation and other support activities.

Microbiology Laboratory - Lab Practices

Code	Title	Description
PPM-1200	Principles of Good Aseptic Technique	The principles of good aseptic technique and how they are applied in microbiological testing.
PPM-1210	Basic Microbiological Techniques	The techniques frequently used in microbiology laboratories including media preparation, handling stock cultures, and pure culture techniques.
PPM-1211	Introduction to Microscopy	The role of microscopy in microbiology, including microscope components and functions, different lens types, and various microscopy techniques.
PPM-1212	Introduction to Staining	How to prepare and heat fix a smear correctly. Introduction to three main categories of staining, i.e., simple, differential and structural.
PPM-1213	Staining Techniques	Overview of the techniques used to stain and identify organisms. The types of staining dyes used are detailed and a number of staining techniques are explored, namely Simple Staining, Negative Staining, Gram Staining, Acid-Fast Staining, and Spore Staining.
PPM-1230	Unknown Bacterial Identification	An overview of the laboratory techniques commonly used to determine the morphological and cultural characteristics of unknown bacteria.

Microbiology Laboratory - GMP

Code	Title	Description
PGM-1200	GMP for Microbiology	The importance of GMP in a microbiology laboratory and the rules and guidelines for handling infectious material.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
GXP-1200	Overview of GXP	Overview of the background, purpose, and implementation of GXP regulations (GLP, GCP, GMP) that aim to provide assurance of the safety, efficacy, and quality of pharmaceutical products. It also details the consequences of non-compliance with these regulations.

Manufacturing - Validation

Code	Title	Description
PVF-1130	Fundamentals of Process Validation	Introduction to process validation using the DQ, IQ, OQ and PQ phase approach. A case study of a tablet manufacturing process is presented. Includes validation masterplan, validation life cycle, specification, qualification and revalidation.

Water - Process Understanding

Code	Title	Description
PUA-1250	Water Types & Testing	The different grades of water required in an API plant and the tests that are used to determine the water's purity.
PUA-1251	Water Impurities & Treatment	The most common types of contaminants found and the different treatment steps used to purify water before it can be used in a chemical process.

Operational Excellence

Code	Title	Description
OPE-1101 PREMIUM LESSON	CAPA for Nonconformities	Overview of the key concepts and terminologies associated with nonconformities, and the CAPA methodology used to address them as part of a company's Quality Management System. Using a scenario-driven approach, the user is taken through the key steps of a CAPA process from identifying a problem to verifying the effectiveness of the solutions implemented to resolve it.
OPE-1102 PREMIUM LESSON	GMP Inspection Readiness - Interacting with the Inspector	Using a scenario-driven approach, the types of questions that are typically asked in a GMP inspection situation are detailed along with appropriate responses. Appropriate behaviors that should be exhibited by anyone interacting with an inspector are also explained and illustrated.
OPE-1103 PREMIUM LESSON	Error Reduction in GMP-Regulated Industries	Overview of errors and their impact on GMP-regulated environments, as well as the measures that can be taken to manage these errors and prevent their reoccurrence.

Clinical and Nonclinical e-Lessons

Below is a list of e-Lessons targeted specifically to the Clinical Trials and Nonclinical studies sectors. If you would like to experience any of these e-Lessons, please contact us and we'll set up a tailored e-Lesson demonstration for you on our online Learning Management System.

This will allow you to gather stakeholders together to review both the e-Lessons and the proposed curriculum at one time. And, because it's available for review online, it is accessible from anywhere, allowing you to review from multiple sites and time zones.

'e-Learning that Builds Knowledge'

Clinical Trials GCP Intermediate

Code	Title	Description
CTM-1100	New Drug Development and Clinical Trials	Describes the most important characteristics of drug products and explains why the development and testing of new drug products must be regulated. It provides an overview of the drug development process and the various phases of clinical trials. It also introduces the concept of Good Clinical Practice (GCP).
CTM-1101	Roles and Responsibilities Under ICH GCP	Describes the roles and responsibilities of the different parties involved in initiating, conducting, and overseeing clinical trials according to ICH Good Clinical Practice. After explaining the need for ICH GCP, the module describes the part played by sponsors, investigators and IRB/IEC. The roles of other key contributors to the clinical trial process are also described.
CTM-1102	Anatomy of a Clinical Trial	Overview of the structure and key activities of a clinical trial. It describes the trial process from the planning stages through to implementation and completion. The Lesson reviews key concepts and elements of clinical trial design and introduces basic trial design principles.
CGI-1202	GCP Essential Documents: Investigator's Brochure & Study Protocol	Describes the essential documentation associated with the clinical trials process with emphasis on the Investigator's Brochure and Study Protocol.
DTI-1101 PREMIUM LESSON	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
DTI-1102 PREMIUM LESSON	Data Integrity – GxP Audit Trail Requirements.	Overview of GxP Audit Trail Requirements for personnel who work in GxP-regulated industries and are involved in the creation of electronic records and in the review of these records to ensure they meet regulatory requirements.
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PGL-1206	Laboratory Information Management System	Overview of the purpose and mode of operation of a Laboratory Information Management System (LIMS) with a focus on how samples are processed, from initial receipt in the laboratory through approval of results and batch release.

GCP Inspection Readiness

NOTE: These lessons form a Strategic Premium Suite and are sold as a group of 4 lessons

Code	Title	Description
CIR-1101 **PREMIUM LESSON**	GCP Inspection Readiness - Initiate	Provides practical techniques and strategies for the Initiate phase of preparing for a Good Clinical Practice (GCP) Inspection using project management principles. Key tasks are explained, including confirming the inspection, identifying the key people, defining roles, identifying training/ coaching requirements, and kicking off the project.
CIR-1102 **PREMIUM LESSON**	GCP Inspection Readiness – Plan *(How to Handle Audit Questions)*	Provides practical techniques and strategies for the Plan phase of preparing for a Good Clinical Practice (GCP) Inspection using project management principles. An interactive scenario driven section on the types of questions that are typically asked in an inspection situation is included, along with appropriate responses. The lesson also contains an example of a Project Plan.
CIR-1103 **PREMIUM LESSON**	GCP Inspection Readiness – Execute and Monitor	Provides practical techniques and strategies for the Execute and Monitor phase of a Good Clinical Practice (GCP) Inspection using project management principles. Key tasks explained include discussing known issues and available intelligence, preparing a standard list of questions and answers; preparing key documents, and then executing the Plan when the inspection begins. The lesson contains sample GCP Audit Questions.
CIR-1104 **PREMIUM LESSON**	GCP Inspection Readiness - Close	Provides practical techniques and strategies for the Close phase of a Good Clinical Practice (GCP) Inspection using project management principles. This includes preparing for the close out meeting, performing the close out meeting with the inspector, responding to observations (483s), finalising the internal report, and defining lessons learned.

Nonclinical Laboratory Studies

Code	Title	Description
PGL-1220	GLP – An Introduction	Overview of GLP, its key terms and areas of application, and how nonclinical laboratory studies fit into the overall drug approval process.
PGL-1221	GLP - Working in the Laboratory	Explains GLP requirements for nonclinical studies and, in particular, how these requirements affect the role of an analyst.
DTI-1101 **PREMIUM LESSON**	Data Integrity for GxP Regulated Industries	Overview of data integrity in regulated industries and its essential role in assuring product quality. Key data integrity concepts in GxP environments are explored along with regulatory requirements and expectations. The critical role of personal responsibility in maintaining data integrity compliance is also covered.
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Laboratory Practices

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PPL-1202	Solution Preparation	How to accurately prepare quantitative solutions from solids and liquids. This includes organization of work area, choosing correct grade of materials, quantitative transfer, dissolving solids and topping up.
PPL-1206	Wet Chemistry	Overview of wet chemistry techniques including use of pipettes and burettes, quantitative transfer of materials, and making dilutions.

PPL-1210	Understanding Dissolution	Overview of dissolution testing, including the factors that affect dissolution, and how a solid dosage drug form is absorbed into the bloodstream. 'In vivo' and 'in vitro' analyses are explained and typical in vitro dissolution tests are described.
PPL-1211	In Vitro Dissolution	Overview of how in vitro dissolution is performed in the laboratory. The various stages of the dissolution testing process are described along with the components of a dissolution apparatus and the equipment used for both manual and automatic sampling.
PPL-1212	Dissolution Equipment Set-Up	Overview of how solutions and equipment are prepared for a dissolution process. It includes the preparation of media and standards and typical dissolution apparatus set-up checks that are performed. Manual and automatic sampling operations are also included.
PPL-1213	Dissolution Testing	Overview of how dissolution testing is performed in practice. It includes setting of operational parameters, preparation and addition of dosage forms, sampling, generation and treatment of data, and checking of results against specifications. Criteria for retesting are also explained
PPL-1130 PREMIUM LESSON	Introduction to HPLC	Describes the basic theory and practice of HPLC. Particular focus is given to reverse phase HPLC. The components of a HPLC are described in detail and significant consideration is given to the explanation of results and peak shape. Analytical considerations of special relevance to HPLC are also presented.
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Operational Excellence

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OPE-1103 PREMIUM LESSON	Error Reduction in GMP-Regulated Industries	Overview of errors and their impact on GMP-regulated environments, as well as the measures that can be taken to manage these errors and prevent their reoccurrence.

To discuss your training needs and arrange a demonstration, please contact us today:

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