

LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

ISO 22174 — Microbiology General Guidance on Microbial Examination

ISO Certification Programme



LAPT — London Academy of Professional Training

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Reference FGA-MCB-22174 • ISO Food & Agriculture

UKPRN 10067351 • Registered in England and Wales, company 4984798

AT A GLANCE

REFERENCE	FGA-MCB-22174
AWARD	Certificate
ASSESSMENT	430 marks — 258 to pass (60%)
PREREQUISITES	None
VALIDITY	Lifetime
AWARDING BODY	LAPT — London Academy of Professional Training

CURRICULUM

1

Continuous Improvement in Laboratory Operations

5 chapters · 30 classes 105 marks

• 1 Understanding Continuous Improvement Principles in Microbial Examination — 6 classes

› 1.1 Define Continuous Improvement in Microbial Examination

› 1.2 Identify Key Principles of Continuous Improvement

› 1.3 Analyze Current Laboratory Operations for Improvement Opportunities

› 1.4 Implement Lean Methodologies in Microbial Testing Processes

› 1.5 Measure and Evaluate Performance Metrics in Microbial Examination

› 1.6 Develop a Continuous Improvement Action Plan for Laboratories

• 2 Implementing Quality Management Systems in Laboratory Settings — 6 classes

› 2.1 Define Quality Management Systems in Laboratory Settings

› 2.2 Identify Key Components of ISO 22174 Standards

› 2.3 Analyze Current Laboratory Practices for Quality Gaps

› 2.4 Develop a Plan for Implementing Quality Control Measures

› 2.5 Establish Metrics for Monitoring Quality Improvement

› 2.6 Evaluate the Effectiveness of Quality Management Implementations

• 3 Data Analysis Techniques for Microbial Testing Performance — 6 classes

› 3.1 Identify Key Data Metrics for Microbial Testing

› 3.2 Apply Statistical Methods to Analyze Microbial Test Results

› 3.3 Interpret Graphs and Charts in Microbial Data Analysis

› 3.4 Conduct Root Cause Analysis for Microbial Testing Variability

› 3.5 Utilize Software Tools for Enhanced Data Visualization

› 3.6 Develop an Action Plan Based on Data Insights for Continuous Improvement

• 4 Identifying and Managing Risks in Laboratory Operations — 6 classes

› 4.1 Assessing Potential Risks in Laboratory Operations

› 4.2 Implementing Risk Assessment Techniques

› 4.3 Developing Mitigation Strategies for Identified Risks

› 4.4 Establishing a Risk Management Framework

› 4.5 Monitoring and Reviewing Risk Management Processes

› 4.6 Creating a Culture of Continuous Improvement in Risk Management

• 5 Sustaining Continuous Improvement through Training and Development — 6 classes

› 5.1 Assess Training Needs for Laboratory Personnel

› 5.2 Develop Training Programs Based on ISO Standards

› 5.3 Implement Interactive Training Methods for Skill Development

› 5.4 Evaluate Training Effectiveness Using Feedback Mechanisms

› 5.5 Foster a Culture of Continuous Learning in the Laboratory

› 5.6 Create Sustainable Development Plans for Laboratory Staff

• **1 Fundamentals of Microbiology in Food Safety** — 6 classes

- › 1.1 Understand the Role of Microorganisms in Food Safety
- › 1.2 Explore Common Pathogens in Food Microbiology
- › 1.3 Identify Microbial Growth Conditions Relevant to Food
- › 1.4 Analyze Methods for Microbial Testing in Food Samples
- › 1.5 Evaluate the Importance of Hygiene Practices in the Laboratory
- › 1.6 Apply ISO 22174 Standards to Microbial Examination Procedures

• **2 Laboratory Safety and Good Practices in Microbial Testing** — 6 classes

- › 2.1 Identify Laboratory Hazards in Microbial Testing
- › 2.2 Apply Personal Protective Equipment (PPE) Protocols
- › 2.3 Implement Safe Handling Procedures for Microbial Samples
- › 2.4 Utilize Decontamination Techniques in the Laboratory
- › 2.5 Recognize Emergency Procedures and Response Protocols
- › 2.6 Evaluate Good Laboratory Practices for Accurate Testing

• **3 Sampling Techniques for Microbial Analysis in Food** — 6 classes

- › 3.1 Identify Key Microbial Sampling Techniques for Food Analysis
- › 3.2 Understand the Importance of Sampling Locations in Food Safety
- › 3.3 Evaluate Sampling Tools and Equipment for Microbial Testing
- › 3.4 Apply Proper Sampling Procedures to Prevent Contamination
- › 3.5 Analyze Case Studies on Effective Microbial Sampling in Food
- › 3.6 Develop a Strategic Sampling Plan for Microbial Analysis

• **4 Microbial Detection and Identification Techniques** — 6 classes

- › 4.1 Explore the Importance of Microbial Detection in Laboratory Settings
- › 4.2 Identify Key Techniques for Microbial Isolation and Culture
- › 4.3 Compare Traditional and Modern Methods of Microbial Identification
- › 4.4 Demonstrate the Use of Microscopy in Microbial Examination
- › 4.5 Apply Molecular Techniques for Accurate Microbial Detection
- › 4.6 Assess the Role of Quality Control in Microbial Analysis

• **5 Interpreting and Reporting Microbial Examination Results** — 6 classes

- › 5.1 Analyze Key Microbial Examination Parameters
- › 5.2 Evaluate Microbial Growth Patterns and Trends
- › 5.3 Interpret Laboratory Findings and Their Significance
- › 5.4 Communicate Results Effectively to Stakeholders
- › 5.5 Assess Quality Control Measures in Reporting
- › 5.6 Apply Results Analysis to Real-World Scenarios

• **1 Understanding Microbial Hazards in Food Products** — 6 classes

- › 1.1 Identify Common Microbial Hazards in Food Products
- › 1.2 Analyze Sources of Microbial Contamination in Food Chains
- › 1.3 Understand the Impact of Microbial Hazards on Food Safety
- › 1.4 Explore Risk Assessment Methodologies for Microbial Hazards
- › 1.5 Evaluate Control Measures for Minimizing Microbial Risks
- › 1.6 Demonstrate Practical Applications of Microbial Risk Assessment in Food Products

• **2 Microbial Growth Conditions and Foodborne Pathogens** — 6 classes

- › 2.1 Identify Key Microbial Growth Conditions in Food
- › 2.2 Analyze the Role of Temperature in Microbial Proliferation
- › 2.3 Explore the Impact of pH Levels on Foodborne Pathogens
- › 2.4 Investigate Oxygen Requirements of Various Microbial Species
- › 2.5 Assess Moisture Control and Its Effects on Microbial Survival
- › 2.6 Develop Strategies for Managing Microbial Risks in Food Production

• **3 Microbial Risk Assessment Frameworks** — 6 classes

- › 3.1 Define Key Concepts in Microbial Risk Assessment
- › 3.2 Identify Microbial Hazards in Various Environments
- › 3.3 Analyze Factors Affecting Microbial Risk Levels
- › 3.4 Evaluate Existing Microbial Risk Assessment Frameworks
- › 3.5 Develop a Customized Risk Assessment Plan
- › 3.6 Communicate Risk Assessment Findings Effectively

• **4 Quantitative Risk Assessment in Microbiology** — 6 classes

- › 4.1 Define Quantitative Risk Assessment in Microbiology
- › 4.2 Identify Key Microbial Hazards in Food Safety
- › 4.3 Collect Data for Microbial Risk Assessment
- › 4.4 Analyze Data to Estimate Risk Levels
- › 4.5 Evaluate Prevention and Control Strategies for Microbial Risks
- › 4.6 Communicate Risk Assessment Findings to Stakeholders

• **5 Regulatory and Compliance Frameworks for Microbial Safety** — 6 classes

- › 5.1 Understand Regulatory Frameworks for Microbial Safety
- › 5.2 Identify Key Standards and Guidelines for Microbial Examination
- › 5.3 Analyze the Role of Compliance in Microbial Risk Management
- › 5.4 Assess Stakeholder Responsibilities in Microbial Safety
- › 5.5 Evaluate Case Studies in Compliance and Microbial Hazards
- › 5.6 Implement Best Practices for Meeting Regulatory Requirements

• 1 Understanding Quality Management Systems in Food Safety — 6 classes

- › 1.1 Define Quality Management Systems in Food Safety
- › 1.2 Identify Key Components of Food Safety Management Systems
- › 1.3 Explain the Importance of ISO Standards in Food Safety
- › 1.4 Analyze Common Microbial Risks in Food Production
- › 1.5 Develop Procedures for Effective Microbial Examination
- › 1.6 Implement Continuous Improvement Strategies in Food Safety

• 2 ISO 22174 Framework and Key Principles — 6 classes

- › 2.1 Understand the ISO 22174 Framework for Microbial Examination
- › 2.2 Identify Key Principles of Quality Management in Food Safety
- › 2.3 Explore the Role of Microbial Examination in Food Safety Management
- › 2.4 Assess the Impact of ISO 22174 on Food Safety Practices
- › 2.5 Analyze Case Studies Applying ISO 22174 Principles
- › 2.6 Develop a Plan for Implementing ISO 22174 in Food Quality Systems

• 3 Implementing Quality Management Systems in Food Organizations — 6 classes

- › 3.1 Identify Key Components of Quality Management Systems in Food Safety
- › 3.2 Assess Regulatory Requirements for Food Organizations' Quality Management
- › 3.3 Develop Standard Operating Procedures for Microbial Examination
- › 3.4 Evaluate Existing Quality Management Practices in Food Operations
- › 3.5 Implement Training Strategies for Quality Management System Staff
- › 3.6 Monitor and Improve Quality Management Systems for Continuous Food Safety

• 4 Monitoring and Reviewing Microbial Safety Parameters — 6 classes

- › 4.1 Define Key Microbial Safety Parameters in Food Quality Management
- › 4.2 Explore Techniques for Monitoring Microbial Levels in Food Products
- › 4.3 Analyze Data Collection Methods for Microbial Safety Monitoring
- › 4.4 Implement Review Procedures for Assessing Microbial Safety Compliance
- › 4.5 Evaluate Case Studies of Microbial Safety Assessment in Food Industry
- › 4.6 Develop an Action Plan for Continuous Improvement in Microbial Safety Monitoring

• 5 Continuous Improvement and Compliance in Microbial Examination — 6 classes

- › 5.1 Identify Key Principles of Continuous Improvement in Microbial Examination
- › 5.2 Evaluate Current Compliance Standards for Microbial Testing
- › 5.3 Develop a Microbial Examination Process Map for Quality Management
- › 5.4 Implement Strategies to Enhance Microbial Examination Accuracy
- › 5.5 Analyze Case Studies of Successful Continuous Improvement in Food Safety
- › 5.6 Create an Action Plan for Ongoing Compliance and Improvement in Microbial Practices

• 1 Understanding ISO 22174: Framework and Objectives — 6 classes

- › 1.1 Explore the Purpose of ISO 22174 in Microbial Examination
- › 1.2 Define Key Terminology in ISO 22174 Framework
- › 1.3 Identify the Compliance Requirements for Microbial Testing
- › 1.4 Analyze the Structure of ISO 22174 Standards
- › 1.5 Evaluate the Importance of Leadership in Implementing ISO 22174
- › 1.6 Apply ISO 22174 Principles to Real-World Microbial Examination Scenarios

• 2 Regulatory Environment and Compliance Requirements — 6 classes

- › 2.1 Analyze the Importance of Regulatory Standards in Microbiology
- › 2.2 Identify Key Components of ISO 22174 Certification
- › 2.3 Explore Compliance Requirements for Microbial Examination
- › 2.4 Evaluate Common Challenges in Meeting Regulatory Standards
- › 2.5 Develop Strategies for Effective Compliance Implementation
- › 2.6 Assess the Role of Leadership in Promoting Regulatory Compliance

• 3 Microbial Examination Methods and Standards — 6 classes

- › 3.1 Understand Key Terms in Microbial Examination
- › 3.2 Explore Different Microbial Examination Methods
- › 3.3 Assess Regulatory Standards for Microbial Testing
- › 3.4 Evaluate Calibration and Validation Processes in Microbial Assessments
- › 3.5 Implement Best Practices for Microbial Sample Collection
- › 3.6 Analyze Case Studies of Compliance in Microbial Examination

• 4 Risk Assessment and Management in Microbial Testing — 6 classes

- › 4.1 Identify Key Risks in Microbial Testing Environments
- › 4.2 Analyze Impact of Microbial Contamination on Results
- › 4.3 Assess Regulatory Compliance Requirements for Microbial Testing
- › 4.4 Develop Risk Mitigation Strategies for Testing Procedures
- › 4.5 Implement Best Practices for Monitoring Microbial Risks
- › 4.6 Evaluate Effectiveness of Risk Management Plans in Microbial Testing

• 5 Auditing and Continuous Improvement in Compliance Practices — 6 classes

- › 5.1 Identify Key Auditing Principles for Microbial Compliance
- › 5.2 Analyze Regulatory Standards Impact on Audit Practices
- › 5.3 Develop Effective Audit Checklists for Microbial Examination
- › 5.4 Implement Strategies for Continuous Improvement in Compliance
- › 5.5 Evaluate Audit Results and Identify Areas for Improvement
- › 5.6 Create a Framework for Ongoing Compliance Monitoring and Review

• 1 Foundations of Microbial Science in Food Safety — 6 classes

- › 1.1 Identify Key Microbial Agents in Food Safety
- › 1.2 Analyze the Role of Microbial Ecology in Food Safety
- › 1.3 Assess Microbial Hazards and Their Impact on Food Quality
- › 1.4 Explore Methods for Microbial Examination in Food Products
- › 1.5 Apply Risk Assessment Techniques for Foodborne Pathogens
- › 1.6 Develop Strategic Leadership Approaches to Enhance Food Microbiology Practices

• 2 Implementing ISO 22174 Standards in Microbial Testing — 6 classes

- › 2.1 Understanding ISO 22174 Standards in Microbial Testing
- › 2.2 Identifying Key Components of Effective Microbial Examination
- › 2.3 Developing a Strategic Framework for ISO 22174 Implementation
- › 2.4 Engaging Stakeholders in the Microbial Testing Process
- › 2.5 Evaluating Compliance and Quality Control Measures
- › 2.6 Applying ISO 22174 Standards to Real-world Microbiological Scenarios

• 3 Risk Assessment and Management in Food Microbiology — 6 classes

- › 3.1 Identify Key Microbial Hazards in Food Processing Environments
- › 3.2 Analyze Risk Factors Associated with Foodborne Pathogens
- › 3.3 Assess Current Risk Assessment Protocols in Food Microbiology
- › 3.4 Develop a Microbial Risk Management Plan for Food Safety
- › 3.5 Implement Effective Monitoring and Control Measures for Risks
- › 3.6 Evaluate the Impact of Risk Management Strategies on Public Health

• 4 Strategic Leadership and Quality Assurance in Microbial Examination — 6 classes

- › 4.1 Assessing Leadership Roles in Microbial Quality Assurance
- › 4.2 Implementing ISO Standards in Microbial Practices
- › 4.3 Evaluating Risk Management Strategies in Microbiology
- › 4.4 Developing Effective Communication for Quality Leadership
- › 4.5 Fostering a Culture of Continuous Improvement in Microbial Examination
- › 4.6 Integrating Strategic Leadership with Quality Metrics in Microbiology

• 5 Future Trends and Innovations in Microbial Food Safety Leadership — 6 classes

- › 5.1 Analyze Future Microbial Risks in Food Safety
- › 5.2 Evaluate Emerging Technologies for Microbial Detection
- › 5.3 Implement Innovative Practices in Microbial Safety Management
- › 5.4 Assess the Role of Data Analytics in Microbial Leadership
- › 5.5 Develop Strategic Partnerships for Enhanced Food Safety
- › 5.6 Create Action Plans for Adapting to Industry Innovations