GLLP Global Laboratory Leadership Programme

A health initiative by FAO, WHO, WOAH, ECDC, CDC, APHL

Strong leaders for health security

GLLP Modules Content Summary

Version 5, 2026

Introduction

The Global Laboratory Learning Package (GLLP) Learning Package is composed of 43 Learning Modules that cover essential competencies needed by laboratory leaders to direct sustainable laboratories and build laboratory systems. The Learning Package is available on the WHO Health Security Learning Platform (HSLP) and on the APHL Learning Center.

The GLLP modules are listed in the table below. For each, corresponding competencies, estimated number of contact hours and learning objectives are indicated.

Essential laboratory leadership competencies are described in the *Laboratory Leadership Competency Framework*. The Competency Framework is intended to be used as a tool in mentoring current and emerging laboratory leaders. Competencies are broken down further into domains, subdomains, and areas of activity. A total of 170 areas of activity reinforce each other and completion of the GLLP in its entirety will require participants to complete or demonstrate proficiency in all nine competencies.

The present document maps the content of the learning modules to the essential competencies (domains and areas of activity). Therefore, this document can be used by GLLP participants to identify which competencies are addressed in each of the leaning modules. On average, each module covers 7 areas of activity.

As defined in the Competency Framework, a numbering code was created to identify each competency (one digit), domain (two digits), subdomain (two digits plus one letter) and area of activity (three digits). The number codes of competency domains and areas of activity that map a certain learning module are indicated in the second column of the table below (for example, area of activity *1.1.1 Organizational structure* is addressed in module *1.A.1 Introduction to the Global Laboratory Leadership Programme*).

This document is closely related to the content of the *Laboratory Leadership Competency Framework*.

eLearning courses

The GLLP Partners have developed self-paced eLearning courses that supplement GLLP didactic sessions. The courses can be assigned as pre-work for in-person or virtual sessions. The courses are based on the content of the modules listed below but may not include all the competencies and objectives, and do not include the same activities. The GLLP modules that have been developed as eLearning courses are indicated in the table below by this icon . Competency domains, areas of activities, and module objectives included in both modules and eLearning courses are noted with an asterisk (*). Competencies and module objectives without an asterisk are not covered in eLearning courses. For each eLearning course, the estimated time for completion is 1 to 3 hours. All courses are open access, but registration may be required. Anyone can register and enroll in the courses. See Annex 1 for host websites.

Note: The eLearning courses are not a substitute for in-person or instructor-led virtual sessions but rather supplement the material and may allow for shortened didactic sessions.

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
1 Introduction			
1.A Introduction to GLLP and Laboratory Systems			
1.A.1 Introduction to the Global Laboratory Leadership Programme	1.1.1* 1.1.2* 1.1.4* 2.2.2 2.4.3* 5.6.6	6.25	Define laboratory and recognize the current work challenges for laboratories* Define The One Health Approach and identify practical aspects that could be* implemented in your laboratory to enhance a One Health approach* Identify the 9 competencies in the Laboratory Leadership Competency Framework*
1.A.2 An Introduction to Laboratory Systems	1.1.1* 1.1.2* 1.4.3 2.4.1 2.4.2* 2.4.3* 2.4.5 2.4.6	6.25	Define laboratory network and laboratory system* Describe the current status of their country's laboratory system Show how their laboratory system incorporates different sectors Recognize the importance of inter-sectoral collaboration and communication for effective pathogen detection and response* Indicate their knowledge of their sector through completion of the GLLP Laboratory Sector Questionnaire*
2 Laboratory Management			
2.A General Management Principles			
2.A.1 General Management	3.1.1 3.1.2 3.1.4 3.1.5 3.1.6 3.2.6	5.25	Describe the roles and responsibilities of management Define laboratory core functions and directives and management's role in supporting core functions Explain the need for evaluation of laboratory services Understand laboratory operations and workflow
2.A.2 Financial Management	1.3.7 3.2.1 3.2.2 3.2.3 3.2.4 3.2.5	6.5	Classify various types of budgets, budgeting processes and costs Describe how internal controls are used for budget monitoring and evaluating Outline the steps in a cost benefit analysis and define Return on Investment (ROI) Describe the laboratory manager's role in contract management Describe the purpose and features of a financial audit Explain the importance of a financial sustainability plan
2.A.3 People Management	1.4.2 1.4.3 2.2.2 2.2.3 3.1.3 3.1.4 3.2.7 3.2.8 3.2.9 3.2.10 3.2.11 3.2.12	8.5	Describe the manager's role in people management Execute the staff recruitment process Implement staff retention and development strategies Implement performance management processes Distinguish between supervision, coaching and mentoring Manage teams through the stages of team development Apply seven steps to conflict resolution Identify and respond to work related stress

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
2.A.4 Laboratory Information Systems	1.2.1 1.2.2 1.2.3 1.2.4 1.2.5 1.2.6 1.2.7 3.1.3 3.1.8 5.2.1 5.2.2	3.75	Recognize the role of leadership in optimizing and implementing LIMS List essential requirements for a LIMS Explain the importance of standardization in laboratory information management Explain how LIMS supports data management throughout the laboratory workflow Develop strategies for secure data storage and data sharing Explain the leadership roles and responsibilities in planning, implementing, and sustaining an electronic LIMS Analyze the factors that support effective eLIMS selection and implementation Evaluate the impact of eLIMS implementation
2.B Quality Management			
2.B.1 Introduction to Quality Management System for Laboratory Leaders	1.1.1. 3.1.4 5.1.5 5.6.1 5.6.6	4.25	Evaluate the importance of a Quality Management System (QMS) in ensuring accurate, reliable, and timely laboratory results Explain the 12-quality system essential elements and their application across the laboratory workflow Describe staff roles in implementing and sustaining a QMS Discuss the skills needed for each laboratory QMS role
2.B.2 Quality Management – Policies, Processes and Documentation	1.1.3 1.2.1 5.1.5 5.2.1 5.2.2 5.5.2	3.25	Explain the importance of policies, processes, and procedures in a laboratory quality management system. Differentiate between policies, processes, and procedures, and illustrate how they fit together within quality system framework. Evaluate the role of a quality manual in establishing and maintaining a laboratory quality management system. Design a document control system that ensures accuracy, accessibility, and compliance with relevant standards. Apply principles of document and record management to develop or improve laboratory documentation practices
2.B.3 Laboratory Quality Standards	1.1.3 3.1.6 5.1.5 5.6.1 5.6.6 5.6.8	4.0	Discuss national policies for laboratory quality Develop national standards for quality Examine international standards for laboratory quality Illustrate the connection between International Laboratory Standards and the Quality Systems essentials Identify the benefits of accreditation

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
2.B.4 QMS Accreditation	5.1.6 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7	2.25	Prioritize the basic steps in gaining laboratory accreditation Recognize the laboratory leader's role in accreditation Conduct a gap analysis Implement external quality assessment in the laboratory
2.B.5 Audit	3.1.6 5.6.2 5.6.7	2.25	Describe an audit including the process and types of audits Compare and contrast internal vs external audits Develop a plan for an internal audit program Construct responses to audit findings Identify the leader's role in the audit process
2.B.6 Continual Quality Improvement	5.6.1 5.7.1 5.7.2	5.0	Define continual improvement Summarize continual improvement strategies in the laboratory Support a culture of continual improvement in the laboratory Apply the plan-do-check act cycle to continual quality improvement Develop quality indicators
2.B.7 Nonconforming Events Management	5.5.1 5.5.2 5.5.3 5.7.3 5.7.4	4.5	Define nonconforming event (NCE) Explain consequences of NCEs Apply NCE management program: principles and processes Define root cause analysis Apply root cause analysis tools Analyze and evaluate the results of a root cause analysis Describe corrective and preventive actions (CAPA) Identify effective CAPAs for strengthening the laboratory Explain the difference between preventive action, corrective action, and corrections (remedial actions).

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
2.B.8 Building Trust and Quality: Customer Focus and Strategies for QMS Advocacy	3.1.10 5.8.1 5.8.2	3.5	Identify the internal and external customers of a public health laboratory Explain the importance of understanding customer needs for quality improvement and public health impact Apply strategies to assess customer needs and measure satisfaction effectively Develop practical strategies to gain QMS buy-in from leadership, staff, and stakeholders Assess common barriers to QMS adoption and propose solutions to overcome them
2.C Safety			
2.C.1 Biosafety	1.3.1 1.3.5 1.3.6 6.1.1 6.1.2 6.1.3 6.1.4 6.1.5 6.1.6 6.1.7 6.1.8 6.1.9	7.0	Define laboratory biosafety Identify the essential elements of biosafety policies and procedures Discuss international guidance on biosafety for health laboratories Describe a risk- and evidence-based approach to biosafety Discuss the primary steps required to perform a risk assessment Define mitigation control measures Explain the importance of biosafety training Discuss waste management requirements
2.C.2 Biosecurity	1.2.7 1.3.2 5.1.3 5.1.4 6.2.1 6.2.2 6.2.3 6.2.4 6.2.5 6.2.6 6.2.7 6.2.8 6.2.9	6.5	Define laboratory sample security Define laboratory biosecurity Discuss the role of international and/or national guidance and regulations relevant to laboratory biosecurity practices and procedures. Define the essential elements to be included in laboratory biosecurity policies and procedures Discuss the steps required to carry out a laboratory biosecurity risk assessment Define mitigation control measures and be able to prioritize them based upon assessed risks Discuss principles of biosecurity program management
2.C.3 Shipment of Dangerous Goods	5.1.1 6.3.1 6.3.2 6.3.3 6.3.4 6.3.5	4.5	Describe national and international regulations pertaining to the transport of dangerous goods Develop policies, processes and SOPs to address dangerous goods classification requirements in their laboratory Develop processes and SOPs that address the use of infectious substance classification in their laboratory Explain the importance of packaging, labelling and completion of shipping documents Describe the training required by staff involved in shipping of dangerous goods

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
2.D Laboratory Role in Disease Surveillance			
2.D.1 Principles of Surveillance 	1.1.4* 3.1.7* 7.1.1* 7.1.2* 7.1.3* 7.1.4* 7.1.5*	7.75	Define surveillance* Describe the recommended legal authority behind health surveillance* Explain the types of surveillance and the surveillance cycle* Describe the diverse contributions of laboratories to disease and health hazard surveillance* Discuss the development of testing algorithms and strategies* Explain how surveillance data are used for prioritizing diseases and health hazards*
2.D.2 Outbreak Investigation 	3.1.7* 4.4.1 4.4.2 4.5.2* 7.2.1* 7.2.2* 7.2.3* 7.2.4* 7.2.5*	7.25	Identify key components of an outbreak investigation* Describe basic functions of outbreak response teams* Reflect on the role of laboratories in outbreak response*
2.E Managing Emergencies			
2.E.1 Emergency Preparedness	3.1.2 8.1.1 8.1.2 8.1.3 8.1.4 8.1.5 8.1.6 8.1.7 8.1.8 8.1.9 8.2.6	6.75	Define hazards, emergencies, disasters and the role of emergency preparedness Describe principles of Incident Management and the role of the Emergency Operations Center Describe the risk assessment process Discuss the laboratory's role in emergency response planning Identify then categories and types of emergency response plans Explain the value of preparedness training and simulation exercises
2.E.2 Emergency Response	3.1.3 3.1.9 8.2.1 8.2.2 8.2.3 8.2.4 8.2.5 8.2.6 8.2.7	5.75	Describe the emergency response cycle Discuss the emergency assessment process Classify laboratory emergency response partners Describe laboratory priorities during an emergency response Discuss the implementation of functional response plans
2.E.3 Emergency Recovery	8.3.1 8.3.2 8.3.3	3.25	Describe the process of recovery from an emergency Describe the activities related to recovery Discuss the challenges of recovery for animal health Explain how to use an After Action Review Discuss the opportunities for improvement during recovery
3 Laboratory Leadership			
3.A General Leadership			

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
3.A.1 General Leadership Skills	1.4.2 2.2.2* 2.2.3 2.2.4* 2.5.2 3.1.4* 3.2.8	3.5	Define leadership and leadership skills* Describe the role of the laboratory leader* Assess your leadership skills* Develop a 90-day individual action plan to enhance your leadership skills in support of your laboratory
3.A.2 Strategic Planning	1.1.1 1.1.3* 1.1.4 1.4.1* 2.1.1* 2.1.2* 2.1.3* 2.4.3 3.1.3* 5.3.2	8.25	Define the relationship between laws, regulations and policies* Describe the purpose of laboratory policies* Describe the process of developing laboratory policies* Review and revise laboratory policies Apply principles of policy development to develop laboratory policies Define strategic thinking and strategic planning* Describe the purpose of a strategic plan* Describe the process of developing a strategic plan*
3.A.3 Organizational Leadership	1.1.1 2.2.1* 2.2.2 2.2.3* 2.2.4* 3.2.6* 3.2.8*	7.0	Define an organization and its components* Describe organizational models and standards Identify your personality style Discuss ways to motivate others* Describe principles of change management* Develop an understanding of how change is inevitable* Explain why learning to manage change is essential* Employ tools to help others better adapt to change*
3.A.4 Critical Thinking, Problem-Solving and Decision-Making	2.1.1* 2.3.1* 2.3.2* 2.3.3* 5.5.3* 5.7.2*	7.25	Define critical thinking* Demonstrate how to use critical thinking and questioning skills Define problem* Describe the problem-solving process* Describe critical thinking and its application to problem-solving Describe decision-making processes Identify decision-making styles* Identify decision-making traps Establish when to use a group for decision-making Describe the analytical tools for decision-making Describe how to use the Plan-Do-Check-Act cycle*

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
3.A.5 Partnerships and Coalition Building	1.1.1* 1.2.4* 2.4.1* 2.4.2* 2.4.3* 2.4.4* 2.4.5* 2.4.6* 4.1.1* 4.1.2* 4.3.2*	4.75	Map the health system* Perform a stakeholder analysis* Define a coalition an describe the coalition building process* Support partnerships and coalitions for a One Health approach Explain the value of information sharing* Describe advocacy and advocacy skills* Describe the role of a laboratory leader as an advocate*
3.A.6 Ethics in the Laboratory	1.2.4* 1.2.7* 2.5.1* 2.5.2* 2.5.3* 2.5.4*	5.5	Define ethics and explain ethical principles* Explain the role of ethics in the laboratory* Describe the role of confidentiality in the laboratory* Explain purpose of a code of conduct in the laboratory* Define and identify conflict of interest* Describe local laws and regulations relevant to ethics
3.B Communications			
3.B.1 General Communication Skills	1.2.5 4.1.1* 4.1.2 9.1.5*	8.0	Recognize the value of knowing your audience* Identify the components and barriers to effective communication* Explain the value of active listening and supportive communication* Demonstrate effective written communication
3.B.2 Proposal Writing	2.4.6 4.2.1 4.2.2 4.2.3 4.2.4 9.1.4	3.25	Describe types of proposals Outline the essential components of a proposal Identify sources of funding Identify potential partners for proposal development List strategies for competitive applications Describe criteria and process for the review of a proposal

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
3.B.3 Media Relations	4.3.1 4.3.2 4.4.3 8.2.7	3.25	Describe the relationship between the laboratory and the media Evaluate the use of the media in science communications Outline media relations policies Describe media relations strategies Describe media communication strategies Explain the obstacles of communicating scientific information to the public Determine and formulate the message of the communication Identify the required elements of a press release Practice methods of oral communication with the media
3.B.4 Risk Communication	4.4.1 4.4.2 4.4.3 8.1.9 8.2.7	5.25	Discuss the principles of risk communication Employ risk communication strategies in emergency and non-emergency situations Discuss the laboratory's input in the emergency risk communication plan Develop key messages for risk communication Discuss the importance of community engagement and empathetic messaging in successful risk communication
3.B.5 Scientific Communication	4.5.1 4.5.2 7.2.3 9.1.5	5.25	Outline the critical elements of effective scientific communication Recognize how a message changes for science-based and non-science-based audiences Follow the guidelines and best practices for scientific writing including the development of an abstract Present scientific oral presentations Follow best practices for creating a scientific poster
3.C Research			
3.C.1 Research and Innovation	2.1.1 2.5.2 4.2.1 4.2.2 4.2.3 4.2.4 4.5.1 4.5.2 9.1.1 9.1.2 9.1.3 9.1.4 9.1.5 9.2.1 9.2.2 9.2.3	6.25	Define health-related research and explain the laboratory's role in carrying out health-oriented research projects Demonstrate how research proposals are designed and reviewed Outline ethical principles as they apply to research endeavors Explain the importance of communicating research findings Demonstrate how to create an environment conducive to innovative research

Section/Unit/Module	Competency Domain/ Area of Activity	Contact hours	Module objectives
4 Laboratory Systems			
4.A Model Laboratory Systems			
4.A.1 Model Laboratory System Overview	1.1-1.4	6.0	Define laboratory network and laboratory system Identify potential partners and stakeholders of a laboratory system Identify the key elements for developing a national laboratory strategic plan Recognize the capabilities of a comprehensive laboratory system Describe six laboratory system essentials
4.B Laboratory System Essentials			
4.B.1 Policy and Legal Framework	1.1	13.15	For 4.B.1-6 Laboratory System Essentials: Discuss each of the six laboratory system essentials in relation to the assessment questions Identify gaps within each of the six laboratory system essentials that require action Review aggregate results of the GLLP Laboratory Systems Assessment Questionnaire Create an outline of an action plan for the next 3 years
4.B.2 Infrastructure	1.3		
4.B.3 Workforce	1.4		
4.B.4 Information Systems	1.2		
4.B.5 Quality Management System	5.1-5.8		
4.B.6 Biosafety and Biosecurity	6.1-6.2		
4.C Case Study			
4.C.1 Infectious Disease Case Study	1.1-1.4	7.0	Recognize the value of case studies to assess strengths, weaknesses, and the general preparedness of a national health laboratory system. Apply the knowledge obtained from this case study to their own laboratory, laboratory network and national situation and realities, working towards strengthening or building a national health laboratory system.
4.D Developing Laboratory System			
4.D.1 Laboratory System Development: Moving Forward	1.1-1.4	7.5	Be able to pull all aspects covered throughout the sessions together in order to create a concrete action plan to develop a laboratory system.

Annex 1: eLearning Courses

The annex lists current eLearning courses developed by GLLP Partners, the website that hosts the eLearning course and the languages the course is available in. This table will be updated as new course offerings become available. Direct links to the courses can be found on the WHO Health Security Learning Platform (HSLP) or the APHL Learning Center (ALC) in the GLLP Implementation Toolbox under GLLP eLearning courses.

Competency domains, areas of activities, and module objectives included in both modules and eLearning courses are noted with an asterisk (*) in the previous pages' table. Competencies and module objectives without an asterisk are not covered in eLearning courses.

Section/Unit/Module	Link to hosting website	Languages available
1 Introduction		
1.A Introduction to GLLP and Laboratory Systems		
1.A.1 Introduction to the Global Laboratory Leadership Programme	https://learn.aphl.org/	English
1.A.2 An Introduction to Laboratory Systems	https://learn.aphl.org/	English
2 Laboratory Management		
2.D Laboratory Role in Disease Surveillance		
2.D.1 Principles of Surveillance	https://training.woah.org/	English, French, Spanish
2.D.2 Outbreak Investigation	https://training.woah.org/	English, French, Spanish
3 Laboratory Leadership		
3.A General Leadership		
3.A.1 General Leadership Skills	https://learn.aphl.org/	English
3.A.2 Strategic Planning	https://learn.aphl.org/	English
3.A.3 Organizational Leadership	https://learn.aphl.org/	English

Section/Unit/Module	Link to hosting website	Languages available
3.A.4 Critical Thinking, Problem-Solving and Decision-Making	https://learn.aphl.org/	English
3.A.5 Partnerships and Coalition Building	https://learn.aphl.org/	English
3.A.6 Ethics in the Laboratory	https://learn.aphl.org/	English
3.B Communications		
3.B.1 General Communication Skills	https://learn.aphl.org/	English