

PML60104 – Advanced Diploma Laboratory Operations

Summary of Competency Units

PMLCOM600B - Develop and maintain laboratory documentation

This unit covers the ability to develop and maintain relevant documentation and systems in response to identified information requirements or changes in laboratory policy or external accreditation requirements. It includes the analysis of specialised technical requirements and the development and/or amendment of workplace documents, procedures and record keeping systems using established workplace procedures. Final responsibility for documentation and systems generally rests with professional scientific/medical/engineering staff who have the appropriate signatory status or legal delegation.

Status Core

Elements

- Recognise documentation needs/deficiencies
- Develop/revise documentation
- Implement and evaluate new laboratory documentation

Prerequisites:

This unit of competency has no prerequisites.

PMLOHS601A - Implement and monitor OHS and environmental management systems

This unit covers the ability to implement and monitor the environmental and OHS management systems (OHSMS) for a work group or laboratory, within the scope of a 'head officer's' responsibilities as defined in the Australian Standards AS 2243.1 Safety in laboratories. Where the OHSMS is already established then this competency may apply to the review of the system. At this level, personnel should be able to interpret and explain those sections of OHS legislation, codes, regulations and Australian standards that apply to the tasks undertaken in the workgroup. This unit assumes that expert OHS and environmental advice is available, as required, either internal or external to the enterprise.

Status Core

Elements

- Implement requirements for the management systems
- Implement and maintain participative arrangements for the management of OHS and the environment
- Implement and maintain OHS and environmental risk management processes
- Implement and maintain an OHS and environmental training program
- Implement and maintain a system for records
- Identify areas for systems improvement
- Initiate and maintain systems improvements

Prerequisites:

This unit of competency has no prerequisites.

PMLORG600B - Supervise laboratory operations in work/functional area

This unit covers the senior technician/supervisor's role in planning, allocation of tasks, coordination, quality assurance, recording and reporting of laboratory outputs. This requires significant judgement about work sequences, choice of appropriate technology and procedures to ensure that products and services meet customer expectations and are provided safely and efficiently in keeping with enterprise business plan. Under broad direction from scientists/medical staff/engineers, the senior technician/supervisor accepts responsibility for the day-to-day operation of his/her functional area.

Status Core

Elements

- Program and direct work practices within functional area
- Manage personnel within work area
- Establish resource requirements and operating budgets
- Procure resources to achieve operational plans
- Arrange for the recruitment and induction of personnel as appropriate

Prerequisites:

This unit of competency has no prerequisites.

PMLORG601B - Maintain registration and statutory or legal compliance in work/functional area

This unit covers the senior technician/supervisor's responsibility to ensure that her/his work or functional area complies with legislation and licensing, registration, ethical or accreditation requirements (for example, NATA) and enterprise policies and procedures. Under broad direction from scientists/medical staff/engineers, the senior technician/supervisor accepts responsibility for the day-to-day operation of his/her functional area.

Status Core

Elements

- Interpret and communicate current legislation, codes and standards
- Ensure that work practices meet compliance requirements
- Monitor, analyse, adjust and report performance
- Investigate, rectify and report non-conformance

Prerequisites:

This unit of competency has no prerequisites.

PMLQUAL600B - Maintain quality system and continuous improvement processes within work/functional area

This unit covers the senior technician/supervisor's responsibility to ensure that quality system requirements are met and to initiate continuous improvements within the work or functional area. Under broad direction from scientists/medical staff/engineers, the senior technician/supervisor accepts responsibility for the day-to-day quality of outputs for his/her work or functional area.

Status Core

Elements

- Develop and maintain quality framework within work area
- Maintain quality documentation
- Provide training in quality systems and improvement processes
- Optimise and report performance
- Evaluate relevant components of quality system

Prerequisites:

This unit of competency has no prerequisites.

PMLTEAM600B - Manage and develop teams

This unit covers the ability of senior technicians/supervisors to develop and empower team members through motivating, mentoring, coaching and promoting team cohesion to achieve planned outcomes.

Status Core

Elements

- Promote team effectiveness
- Identify and develop individual potential
- Monitor individual and team performances

Prerequisites:

This unit of competency has no prerequisites.

PMLCAL500A - Perform non-standard calibrations

This unit covers the ability to recognise non-conforming calibration work, to research and select the most appropriate test method or calibration procedure for a given measurement request and then conduct the calibration. It also covers the ability to modify and revise existing procedures or substitute alternative instruments and measurement standards, when necessary.

Status Elective

Elements

- Select the appropriate calibration procedure
- Prepare items for calibration
- Perform calibration
- Finalise calibration

Prerequisites:

This unit of competency has prerequisite of PMLCAL400A Performe standard calibrations.

PMLCAL501A - Create or modify calibration procedures

This unit covers the ability to create or modify calibration procedures in response to the introduction of alternative/new equipment, changing test circumstances, activities involved in research and development trials or to meet client needs. The unit covers research of current calibration procedures and technology, development or modification of a procedure, its subsequent trialing and confirmation that it is fit for purpose.

Status Elective

Elements

- Assess the suitability of available calibration procedures
- Develop procedure
- Prepare equipment for testing
- Trial modified/new calibration procedure
- Confirm the modification or new procedure is fit for purpose
- Document and review modified/new calibration procedure

Prerequisites:

This unit of competency has prerequisite of PMLCAL500A Perform non-standard calibrations

PMLCOM500B - Provide information to customers

This unit covers the ability to respond to both internal and external inquiries of a specialised technical nature. The advice and information requested should require the gathering of information, such as: trend analysis, collection of data and samples, confirmation of validity of results, revision of plans, or product advice additional to that on data sheets.

Status Elective

Elements

- Assess the request for information and/or advice
- Prepare response
- Provide information and/or advice
- Record details of the request and response

Prerequisites:

This unit of competency has no prerequisites.

PMLDATA500B - Analyse data and report results

This unit covers the ability to perform scientific calculations, analyse trends and uncertainty in data and report results within the required timeframe.

Status Elective

Elements

- Perform scientific calculations
- Analyse trends and relationships in data
- Determine variation and/or uncertainty in data distributions
- Check for aberrant results
- Report results

Prerequisites:

This unit of competency has prerequisite of PMLDATA400A Process and interpret data.

PMLDATA501B - Use laboratory application software

This unit covers the ability to use and apply computer application software in the laboratory, field and production plants for analysis and reporting.

Status Elective

Elements

- Access application software
- Use software for specified purposes
- Produce reports of retrieved data and/or processed data
- Perform simple record housekeeping

Prerequisites:

This unit of competency has no prerequisites.

PMLMAIN501B - Assist in the maintenance of reference materials

This unit covers the ability to assist in the maintenance of reference materials that can be used in the identification of new specimens and allow for the quality control of laboratory procedures. The unit does not cover the scientific identification of species or specimens.

Status Elective

Elements

- Acquire reference materials
- Maintain reference materials
- Dispense reference materials to clients
- Maintain a safe work environment

Prerequisites:

This unit of competency has no prerequisites.

PMLMAIN502A - Maintain instruments and equipment

This unit covers the ability to check the serviceability and calibration of laboratory/field instruments and equipment and perform routine maintenance, such as cleaning and replacement of consumables and minor components. Personnel are also required to perform basic troubleshooting and repairs consistent with warranty and service agreements.

Status Elective

Elements

- Perform serviceability checks
- Conduct routine maintenance safely
- Perform calibration/qualification checks
- Arrange instrument servicing where appropriate
- Maintain a safe work environment

Prerequisites:

This unit of competency has no prerequisites.

PMLORG500B - Schedule laboratory work for a small team

This unit covers the ability to schedule laboratory work for a small team to meet operational requirements. It covers the ability to identify resource requirements and then document, monitor and adjust schedules in response to operational variations and in consultation with relevant personnel.

Status Elective

Elements

- Determine work requirements and laboratory resources
- Develop schedules in consultation with relevant personnel
- Monitor schedules
- Adjust schedules in consultation with senior personnel

Prerequisites:

This unit of competency has no prerequisites.

PMLORG602B - Manage complex projects

This unit covers the ability to interpret a complex technical brief, determine project methodology and resource requirements, establish a project plan, manage the project to a successful conclusion and evaluate the outcomes.

Status Elective

Elements

- Interpret brief and design feasible project plan
- Establish and implement project plan
- Manage project
- Finalise project
- Evaluate project methodology

Prerequisites:

This unit of competency has no prerequisites.

PMLQUAL500A - Monitor the quality of test results and data

This unit covers the ability to analyse a series of test results and data to detect potential or actual non-conformances, assess their significance and recommend preventative or corrective actions. The unit assumes personnel will have access to enterprise quality assurance procedures based on Australian and/or international standards. This unit of competency does not cover the adaptation or development of test methods or procedures.

Status Elective

Elements

- Verify accuracy of data and technical records
- Assess the quality of data/results
- Identify potential causes for unacceptable results
- Report findings to relevant personnel

Prerequisites:

This unit of competency has prerequisite of PMLDATA400A Process and interpret data.

PMLQUAL601B - Conduct an internal audit of the quality system

This unit covers the senior technician/supervisor's responsibility to prepare for, carry out and document an internal audit of aspects of the laboratory's quality system. It also covers the implementation of the identified corrective action and opportunities for improvement and the monitoring of their effectiveness. Senior technician/supervisors often play a key role in audit teams because of their analytical and diagnostic skills and extensive knowledge of both quality systems and complex technical procedures.

Status Elective

Elements

- Prepare for internal audit
- Conduct audit
- Report findings
- Complete corrective actions

Prerequisites:

This unit of competency has no prerequisites.

PMLTEST511B - Supervise earthworks inspection, sampling and testing operations

This unit covers the ability to supervise and direct earthworks operations based on observation and testing. This competency is typically performed by experienced technicians or para-professionals, who often supervise or direct less experienced technical personnel.

Status Elective

Elements

- Prepare for on-site operations
- Establish on-site operations
- Supervise earthworks operations
- Analyse project data and report to client
- Maintain enterprise records

Prerequisites:

This unit of competency has prerequisites of PMLTEST403B or PMLSAMP400B or PMLTEST406A.

PMLTEST513A - Apply routine chromatographic techniques

This unit covers the ability to analyse samples using routine chromatographic techniques. The unit also includes establishing client needs for routine and non-routine samples, optimising enterprise procedures and instruments for specific samples, obtaining valid and reliable data and reporting test results. Personnel are required to recognise atypical test data/results and troubleshoot common analytical procedure and equipment problems.

Status Elective

Elements

- Establish client needs and schedule analysis
- Prepare samples and standards
- Set up and optimise instrument
- Perform analysis
- Process and analyse data
- Maintain a safe work environment
- Maintain laboratory records

Prerequisites:

This unit of competency has prerequisites of PMLTEST303B or PMLTEST402B and PMLTEST404A.

PMLTEST514A - Perform fire assay techniques

This unit covers the ability to safely extract a range of precious metals from their host matrices in readiness for analysis. The unit also covers the ability to select and/or modify laboratory methods to suit particular ores and to ensure total recovery.

Status Elective

Elements

- Classify ore samples and select fluxing method
- Prepare for precious metal recovery
- Recover precious metal(s) from ore sample
- Troubleshoot and correct failed recovery
- Perform daily maintenance of assay equipment

Prerequisites:

This unit of competency has prerequisite of PMLSAMP401A Prepare mineral samples for analysis.

PMLTEST515A - Design and supervise complex environmental field surveys

This unit covers the ability to design and supervise complex field surveys for a wide range of environmental systems. This unit covers confirming survey requirements, designing and organising field surveys to achieve their purpose and supervising the field survey according to a defined plan.

Status Elective

Elements

- Confirm survey requirements with senior staff
- Design field survey activities
- Identify resources and supervise pre-survey checks
- Supervise field survey activities
- Supervise close down of field activities

Prerequisites:

This unit of competency has prerequisite of PMLTEST408A Undertake environmental field based monitoring.

PMLTEST516A - Provide input to production trials

This unit covers the ability to work closely with production personnel to conduct a routine trial to adjust formulations or develop products and processes following preliminary laboratory work. The unit covers monitoring critical process parameters, collection and testing of samples and analysis of the results. The unit does not cover the planning and management of the trial, development of product briefs or the troubleshooting of equipment and production processes.

Status Elective

Elements

- Prepare for the trial
- Participate in the trial
- Assess and report trial outcomes
- Maintain a safe work environment

Prerequisites:

This unit of competency has prerequisites of PMLTEST404A or PMLTEST405A or PMLTEST406A or PMLTEST411A.

PMLTEST520A - Perform complex tests to measure engineering properties of materials

This unit covers the ability to prepare test specimens and perform multi-stage mechanical tests on them. The unit requires personnel to create test conditions that suit the materials intended use, optimise measurement procedures and recognise critical measurement points during the tests.

Status Elective

Elements

- Interpret and schedule test requirements
- Prepare and measure test specimens
- Check equipment before use
- Test samples
- Process and analyse data
- Maintain a safe work environment
- Maintain laboratory records

Prerequisites:

This unit of competency has prerequisite of PMLTEST411A Perform mechanical tests.

PMLTEST521A - Perform laboratory based ecological techniques

This unit covers the ability to participate in laboratory investigations involving animals, plants and related environmental parameters. The animals or plants might be single specimens, parts of specimens or be in culture or under propagation. The investigations might also be part of experimental models that examine interactions of animals and/or plants and their environments. Investigations would generally relate to taxonomy, physiology and pathology, and would be oriented to scientific research, food production and manufacture, and to investigation of biological environments and ecosystems.

Status Elective

Elements

- Process specimens and documentation
- Participate in the identification and classification of species
- Maintain viability and integrity of specimens during experimentation
- Integrate laboratory and field data
- Maintain a safe work environment

Prerequisites:

This unit of competency has prerequisite of PMLTEST407A Perform biological procedures.

PMLTEST522A - Perform complex tests to measure chemical properties of materials

This unit covers the ability to isolate analytes from complex matrices and perform multi staged and/or multi component analysis on them. The unit requires personnel to apply a detailed knowledge of analytical chemistry to plan the analysis, prepare and measure samples, analyse and report results and make approved adjustments to procedures as required. Personnel are required to recognise atypical test data/results and troubleshoot common analytical procedure and equipment problems.

Status Elective

Elements

- Develop an analysis plan with supervisor
- Reduce the complexity of the sample
- Apply quantification method
- Perform analysis
- Process and analyse data
- Maintain a safe work environment
- Maintain laboratory records

Prerequisites:

This unit of competency has prerequisites of PMLTEST513A or PMLTEST524A.

PMLTEST523A - Apply complex instrumental techniques

This unit covers the ability to analyse samples using specialised analytical instruments that require highly developed technical skills to operate effectively. Competency includes the ability to establish client needs for routine and non-routine samples, optimising enterprise procedures and instruments for specific samples, obtaining valid and reliable data and reporting test results. Personnel are required to recognise atypical test data/results and troubleshoot common analytical procedure and equipment problems.

Status Elective

Elements

- Establish client needs and schedule analysis
- Prepare samples and standards
- Setup, optimise instrument and sub systems
- Perform analysis
- Process and analyse data
- Maintain a safe work environment
- Maintain laboratory records

Prerequisites:

This unit of competency has prerequisites of PMLTEST513A or PMLTEST524A.

PMLTEST524A - Apply routine spectrometric techniques

This unit covers the ability to analyse samples using routine spectrometric techniques. The unit also includes establishing client needs for routine and non-routine samples, optimising enterprise procedures and instruments for specific samples, obtaining valid and reliable data and reporting test results. Personnel are required to recognise atypical test data/results and troubleshoot common analytical procedure and equipment problems.

Status Elective

Elements

- Establish client needs and schedule analysis
- Prepare samples and standards
- Set up and optimise instrument
- Perform analysis
- Process and analyse data
- Maintain a safe work environment
- Maintain laboratory records

Prerequisites:

This unit of competency has prerequisites of PMLTEST303B or PMLTEST402B and PMLTEST404A

PMLTEST601B - Classify building sites

This unit covers the ability to classify building sites, including residential, light industrial, commercial and institutional structures for the purpose of providing guidance for the design of footing systems. This competency is typically performed by para-professionals who often guide the work of experienced testers.

Status Elective

Elements

- Prepare for on-site operations
- Conduct on-site investigations
- Conduct laboratory testing
- Assign a classification to the site
- Maintain records

Prerequisites:

This unit of competency has prerequisites of PMLTEST403B and PMLTEST406A.

PMLTEST602A - Prepare plans and quality assurance procedures for environmental field activities

This unit covers the ability to use a systematic planning process to develop plans and quality assurance procedures covering multiple environmental field monitoring or survey activities for a wide range of environmental systems. The unit covers both defining the purpose of the environmental field activities and establishing their overall requirements. These requirements will involve the collection of appropriate data, the monitoring/survey methodologies to be used and the design and documentation of a final overall implementation plan that includes budget, training and resource requirements. This unit of competency does not cover the development of monitoring or survey protocols.

Status Elective

Elements

- Establish the overall requirements of the field activities
- Scope all requirements to collect appropriate data under field conditions
- Select and adapt field protocols covering the field activities
- Design and document a detailed implementation plan
- Prepare a financial budget and staff training and work programs

Prerequisites:

This unit of competency has prerequisite of PMLTEST515A Design and supervise complex environmental field surveys.

PMLTEST603A - Evaluate and select appropriate test methods and/or procedures

This unit covers the senior technician/supervisor's ability to evaluate and select test methods and/or procedures that are relevant to the current and evolving scope of the laboratory's operations. Selection of test methods and/or procedures may involve the appraisal of new and emerging technologies and may inform decision making about possible extension of the laboratory's scope. Alternatively, it may relate to existing testing requirements, 'one off' tests, client's special requirements or new tests required to satisfy new legislative, accreditation, licensing or regulatory requirements.

Status Elective

Elements

- Determine sample characteristics and testing requirements
- Evaluate possible test method(s) and/or procedures(s)
- Recommend appropriate test method(s) and/or procedure(s)
- Confirm and document selected method(s) and/or procedure(s)
- Determine sample characteristics and testing requirements

Prerequisites:

This unit of competency has no prerequisites.

PMLTEST700B - Contribute to the development of products and applications

This unit covers the ability to evaluate a product/application brief and to contribute to the development of products and applications to meet the requirements of the brief.

Status Elective

Elements

- Scope the development project
- Set scope of project
- Develop new product formulation
- Assist in preparation of quality/regulatory compliance procedures/materials
- Document and report project outcomes

Prerequisites:

This unit of competency has prerequisite of PMLTEST603A Evaluate and select appropriate test methods and/or procedures.

PMLTEST701B - Troubleshoot equipment and production processes

This unit covers the senior technical officers ability to apply technical, instrumental and equipment knowledge and skills to troubleshoot testing equipment and testing issues related to production processes, to identify problems and to recommend corrective action.

Status Elective

Elements

- Identify abnormal equipment and/or process performance
- Identify causes of substandard performance
- Recommend corrective action

Prerequisites:

This unit of competency has prerequisite of PMLTEST603A Evaluate and select appropriate test methods and/or procedures.

PMLTEST702B - Contribute to validation of test methods

This unit covers the ability to validate test methods following defined protocols to ensure that they are based on sound scientific principles and are fit for the purpose for which they are to be used.

Status Elective

Elements

- Confirm equipment, including computer systems, has been qualified and validated
- Validate test method according to defined protocol
- Evaluate and record results

Prerequisites:

This unit of competency has prerequisite of PMLTEST603A Evaluate and select appropriate test methods and/or procedures.

PMLTEST703B - Develop or adapt analyses and procedures

This unit covers the ability to develop or adapt analyses and procedures to meet enterprise and/or regulatory requirements. New analyses and associated procedures may be required to meet a customer's brief, analyse new products or raw materials, improve laboratory efficiency, or meet changing regulatory requirements.

Status Elective

Elements

- Determine gaps and deficiencies in present analyses and/or procedures
- Research and propose alternatives
- Evaluate alternatives, develop analyses and recommend methods and procedures
- Document and report new method/procedure

Prerequisites:

This unit of competency has prerequisite of PMLTEST603A Evaluate and select appropriate test methods and/or procedures.

PMLTEST704B - Integrate data acquisition and interfacing systems

This unit covers the ability to automate experimental processes for instrument control and the acquisition and communication of data.

Status Elective

Elements

- Transform physical data into an electronic form
- Convert electronic data for acceptance by computerised system
- Communicate data to, and between, computerised systems
- Document procedures and constraints

Prerequisites:

This unit of competency has prerequisite of PMLDATA501B Use laboratory application software.
