Australian Government

MSL60109 Advanced Diploma of Laboratory Operations

Release 5

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MSL60109 Advanced Diploma of Laboratory Operations

Modification History

Release 5 - ISC upgrade

- Publishing errors corrected
- Prerequisites now marked with an asterisk

Release 4 - ISC upgrade

- Correction of data error in core units – MSAENV472B reinstated as per original release.

Release 3 - ISC upgrade

- Correction of wrong MSAENV unit listed in core and elective units in release 2

Release 2 - inclusion of new electives for forensic testing

Description

This qualification covers the skills and knowledge required to supervise laboratory operations within a work area or project team.

Job roles/employment outcomes
The Advanced Diploma of Laboratory Operations offers training in the coordination of day-to-day laboratory operations. Employment outcomes targeted by this qualification include laboratory supervisors, senior technical officers and similar personnel.

Senior technicians or laboratory supervisors are generally responsible for the planning, allocation of tasks, coordination, quality assurance, recording and reporting of laboratory outputs within their section. 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 work/functional area.

They are often responsible for the effective implementation of operational policies and the technical training of personnel in their work area. They also contribute significantly to the development of these policies through the application of specialised technical knowledge.

The work of laboratory supervisors involves frequent peak periods, multiple and competing demands and frequent interruptions. Immediate decisions are often required. They must be adaptable to deal with the demands brought about by any of a number of causes. For example:

- a range of demanding clients, suppliers or contractors
- changes in technology
- regularly changing priorities.

In the course of their normal work, they:

- plan, allocate and monitor resources for their work area and are responsible for their work group's outputs
- apply in-depth technical knowledge and skills to deliver the variety of products and services associated with the work area
- explain complex instructions and procedures to others
- define and solve complex problems by investigating, developing and testing alternatives in response to vague or ill-defined information which is not readily accessible and requires selective analysis
- make significant contributions to the development of technical and operational policy and procedures within a function or work area
- liaise with outside organisations, customers, suppliers and contractors on technical matters
- provide technical information to internal and external customers
- often provide workplace training and assessment
- implement, maintain and promote OHS, quality and other compliance requirements and conduct audits
- work under the general direction of laboratory or quality managers, or scientific/medical personnel.

They may also undertake a range of complex technical tasks. For example:

- conduct a wide range of complex and specialised tests
- exercise considerable analytical and judgemental skills to determine appropriate methods and procedures from a range of alternatives
- modify methods to cope with non-routine tests and analyses where unusual samples could be involved and/or where the instrumental controls require optimisation
- develop or adapt methods and procedures.

An example of the work of a laboratory supervisor is given below.

- A laboratory supervisor in a large water and sewerage utility company has been a senior technical officer for more than five years. The officer supervises technical personnel in the environmental testing section, monitors the quality of their work, oversees their training and ensures that regulatory and NATA requirements are met. The officer assists with the planning of the section's work program and advises management and customers about test schedules, results and methodology.

Application
This qualification is typically used to develop existing workers to coordinate day-to-day laboratory operations.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Pathways Information

Pathways into the qualification
To enter the Advanced Diploma of Laboratory Operations, entrants must have completed a Diploma of Laboratory Technology or be able to demonstrate equivalent competency. It is also recommended that entrants have had an appropriate period of employment at an occupational level commensurate with the Diploma of Laboratory Technology prior to entry to this Advanced Diploma qualification.

Pathways from the qualification
Career paths for senior technicians, technical specialists and laboratory supervisors are becoming increasingly constrained unless technicians undertake university study. With this in mind, particular attention has been given to stating the critical aspects of competency and essential knowledge required for each unit of competency in sufficient detail to maximise articulation and credit transfer arrangements between the vocational education and training (VET) and higher education sectors.

Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, depending on the jurisdiction, licensing or regulatory requirements may apply to the use of some units in this qualification. Local regulations should be checked for details.

Entry Requirements

Not applicable.

Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Employability Skill	**Industry/enterprise requirements for this qualification include**:
Communication	• Establish and maintain effective communication and consultation with all personnel and clients to ensure smooth and efficient operations • Prepare and maintain quality documentation and keep accurate data records
Teamwork	• Discuss development opportunities with appropriate personnel to assess and confirm requirements • Implement and maintain appropriate participative occupational health and safety (OHS) processes with employees and their representatives • Empower work groups/teams in dealing with technical and work flow problems and suggest improvements • Develop team members through motivating, mentoring, coaching and promoting team cohesion to achieve planned outcomes
Problem solving	• Troubleshoot testing equipment and testing issues related to production processes, and communication between laboratory processes and computer systems to identify problems and to recommend corrective action • Identify and resolve complex problems by using agreed problem solving strategies and act to prevent their recurrence • Modify products and applications to meet evaluation recommendations
Initiative and enterprise	• Identify areas for systems improvement • Develop and introduce practices to improve the work environment • Recommend improvements for future projects • Initiate trial and evaluate corrective action and make appropriate adjustments
Planning and organising	• Organise and optimise the use of resources within agreed parameters to achieve planned outcomes • Develop and coordinate rosters to balance job requirements, laboratory efficiency and skill development opportunities • Determine resource requirements, including personnel, time, equipment and materials • Collect relevant information from manuals, specification sheets, diagnostic equipment and software

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Self-management	• Recognise limits of own professional expertise and make decisions within limits of responsibility and authority • Ensure work practices are conducted in and ethical and professional manner • Apply safety precautions appropriate to the task • Follows enterprise procedures to document development process
Learning	• Consult specialists as necessary • Provide information to employees and develop and implement training programs • Maintain knowledge of current and new requirements impacting on work/functional area • Provide coaching and mentoring support to personnel to change work practices such as difficulties with meeting targets for performance
Technology	• Select, use and evaluate information directories and databases, online data search facilities and computer networks • Use standard laboratory equipped with appropriate pilot batch manufacturing and testing equipment

Packaging Rules

To be awarded an Advanced Diploma of Laboratory Operations competency must be achieved in a total of **thirteen (13)** units of competency, consisting of:

- **seven (7)** core units of competency
- **six (6)** elective units of competency.

Units listed under **core** are considered essential for all laboratory supervisors. The units listed as **electives** may only apply to some personnel according to the size and scope of the particular enterprise and laboratory.

Note: Units marked with an asterisk have one or more prerequisite requirements and must be considered in the total number of units. Please refer to individual units for details.

Core units of competency

- Select all **seven (7)** units of competency listed below.

Unit code	Unit title	Prerequisites
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSL916001A	Develop and maintain laboratory documentation	
MSL916002A	Manage and develop teams	
MSL916003A	Supervise laboratory operations in work/functional area	
MSL916004A	Maintain registration and statutory or legal compliance in work/functional area	
MSL936001A	Maintain quality system and continuous improvement processes within work/functional area	
MSL946001A	Implement and monitor OHS and environmental management systems	

Elective units of competency

Select **six (6)** elective units of competency from Groups A and B, as specified below:

- a minimum of **three (3)** units must be chosen from Group A
- the remainder may be chosen from Groups A and B, to bring the total number of electives to **six (6)**.

Note that **three (3)** of the elective may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are available for inclusion at Advanced Diploma level.

Group A

Unit code	Unit title	Prerequisites
MSL916005A	Manage complex projects	
MSL936002A	Conduct an internal audit of the quality system	
MSL976001A	Classify building sites	*
MSL976002A	Prepare plans and quality assurance procedures for environmental field activities	*
MSL976003A	Evaluate and select appropriate test methods and/or procedures	
MSL977001A	Contribute to the development of products and applications	*
MSL977002A	Troubleshoot equipment and/or production processes	*
MSL977003A	Contribute to the validation of test methods	*
MSL977004A	Develop or adapt analyses and procedures	*
MSL977005A	Integrate data acquisition and interfacing systems	*
MSAENV672B	Develop workplace policy and procedures for sustainability	

Group B

Unit code	Unit title	Prerequisites
MSL905001A	Perform non-standard calibrations	*
MSL905002A	Create or modify calibration procedures	*
MSL905003A	Create or modify automated calibration procedures	*
MSL915001A	Provide information to customers	
MSL915002A	Schedule laboratory work for a small team	

MSL925001A	Analyse data and report results	*
MSL925002A	Analyse measurements and estimate uncertainties	*
MSL935001A	Monitor the quality of test results and data	*
MSL935002A	Assist in the maintenance of reference materials	
MSL935003A	Authorise the issue of test results	*
MSL935004A	Maintain instruments and equipment	
MSL955001A	Supervise a robotic sample preparation system	*
MSL965001A	Design and manufacture glass apparatus and glass systems	*
MSL965002A	Perform glass coating, grinding and finishing operations	*
MSL965003A	Construct, modify and maintain high vacuum systems	*
MSL975001A	Perform microbiological tests	*
MSL975002A	Perform haematological tests	*
MSL975003A	Perform histological tests	*
MSL975004A	Perform chemical pathology tests	*
MSL975005A	Conduct sensory analysis	
MSL975006A	Perform immunohaematological tests	*
MSL975007A	Supervise sampling, inspections and testing at construction sites	*
MSL975008A	Apply electrophoretic techniques	*
MSL975009A	Apply routine chromatographic techniques	*
MSL975010A	Perform fire assay techniques	*
MSL975011A	Design and supervise complex environmental field surveys	*
MSL975012A	Provide input to production trials	*

MSL975013A	Perform tissue and cell culture techniques	*
MSL975014A	Perform molecular biology tests and procedures	*
MSL975015A	Prepare animal and plant material for display	*
MSL975016A	Perform complex tests to measure engineering properties of materials	*
MSL975017A	Perform laboratory-based ecological techniques	*
MSL975018A	Perform complex tests to measure chemical properties of materials	*
MSL975019A	Apply complex instrumental techniques	*
MSL975020A	Apply routine spectrometric techniques	*
MSL975021A	Apply routine electrometric techniques	*
MSL975022A	Perform food analyses	*
MSL975023A	Supervise geotechnical site investigations	*
MSL975024A	Locate record and collect forensic samples	
MSL975025A	Perform complex laboratory testing of forensic samples	
MSL975026A	Perform physical examination of forensic samples	