PART A – SkillsPoint Product Information

Master Product Information

**RTO Code:** **90003**

**Training Product Code:** **MSL50118**

**Release no.** **1**

**Training Product Name:** **Diploma of Laboratory Technology**

**Status of Training Product:** Current

**Release Date:** **01/07/2020**

**Category of Product:**  Nationally Recognised Qualification

Accredited Course

Skill Set

Statement of Attainment

Non Nationally Recognised

**SkillsPoint Details**

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**SkillsPoint Project Identifier: MRS\_18\_05\_MSL50118\_TAS\_Chem**

Master Delivery Information

**Specialist Stream or Industry Identified Stream contained in this TAS:**

**Chemistry**

**Target Student Group Category:**  Pre-employment

Apprentices/Trainees

International Students

Existing Workers

Other (Please specify):

**Mode(s) of Delivery:**  Face to Face Learning

Workplace Training

Online Learning

Blended

Other:

Contents

[PART A – SkillsPoint Product Information 1](#_Toc33773957)

[Master Product Information 1](#_Toc33773958)

[Master Delivery Information 1](#_Toc33773959)

[1. Training Product Overview 3](#_Toc33773960)

[1.1 Training Product Requirements 3](#_Toc33773961)

[1.2 Licensing and/or Regulatory Requirements 3](#_Toc33773962)

[1.3 Qualification Description 3](#_Toc33773963)

[1.4 Pathways 4](#_Toc33773964)

[1.5 Entry Requirements 5](#_Toc33773965)

[1.6 Exit Points 5](#_Toc33773966)

[1.7 Units of Competency 6](#_Toc33773967)

[1.8 Imported Units 8](#_Toc33773968)

[2. Additional Information 9](#_Toc33773969)

[2.1 Environment and Location 9](#_Toc33773970)

[2.2 Language, Literacy and Numeracy 10](#_Toc33773971)

[2.3 Recognition Processes 10](#_Toc33773972)

[2.4 Educational and Support Services 11](#_Toc33773973)

[2.5 WHS Risk Ranking 11](#_Toc33773974)

[2.6 Physical and Learning Resources 12](#_Toc33773975)

[2.7 Industry Engagement 14](#_Toc33773976)

[3. Transition Arrangements 25](#_Toc33773977)

[4. Structure, Delivery and Assessment 25](#_Toc33773978)

[4.1 Volume of Learning 25](#_Toc33773979)

[4.2 Delivery Strategy 26](#_Toc33773980)

[4.3 Assessment 31](#_Toc33773981)

[5. Master TAS Approval 35](#_Toc33773982)

[PART B – Delivery TAS Information 36](#_Toc33773983)

[6. Delivery Details 36](#_Toc33773984)

[6.1 Entry Requirements 36](#_Toc33773985)

[6.2 Additional Student Support at Delivery Location 36](#_Toc33773986)

[6.3 Contextualisation 37](#_Toc33773987)

[7. Third Party Arrangements 37](#_Toc33773988)

[8. Staff Qualifications and Industry Experience 38](#_Toc33773989)

[9. Additional Industry/Community Engagement 40](#_Toc33773990)

[10. Assessment Validation 41](#_Toc33773991)

[10.1 Validation of assessment judgements 41](#_Toc33773992)

[11. Delivery TAS Approval 42](#_Toc33773993)

1. Training Product Overview

### 1.1 Training Product Requirements

**Link to Training Product on**[TGA](http://www.training.gov.au/)**:** **<https://training.gov.au/Training/Details/MSL50118>**

**Number of Core Units:** **5**

**Number of Elective Units: 10**

**Total Number of Units: 15**

**Packaging Rules:**

Total number of units = 15

* 5 core units
* 10 elective units, consisting of:

\*\*At least 7 units from any of the elective lists below, including at least 5 units coded at 5000 or above

\*\*Up to 3 units from any endorsed Training Package or accredited course – these units must be relevant to the work outcome.

Any combination of electives that meets the rules above can be selected for the award of the MSL50118 Diploma of Laboratory Technology. Where appropriate, electives may be packaged to provide a qualification with a specialisation.

Packaging for each specialisation:

…

At least 6 Group B electives must be selected for award of the Diploma of Laboratory Technology (Chemistry)

...

(See the full packaging rules in <https://training.gov.au/Training/Details/MSL50118>).

### 1.2 Licensing and/or Regulatory Requirements

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

### 1.3 Qualification Description

This qualification reflects the role of workers who apply a range of laboratory technologies to conduct scientific-technical tests in most industry sectors, utilising specialist technical knowledge. They conduct a wide range of routine and complex, specialised tests where atypical samples may be involved and the instrumentation used has a wide range of operating variables. Workers communicate sample requirements to other personnel and may liaise with suppliers to troubleshoot product non-conformance. They may also demonstrate methods to others and train team members to collect samples and conduct basic tests reliably.

Workers contribute to the modification of standard operating procedures (SOPs) and enterprise methods when necessary, they may also have a role in the planning of schedules and monitoring of resources in their work area. Work is carried out according to established procedures, often under the management of laboratory or quality managers, or scientific/medical professionals.

### 1.4 Pathways

**Study Pathways**

The study pathways available to students who undertake this Specialist Stream or Industry Identified Stream include:

Further training pathways from this qualification include *MSL60118 Advanced Diploma of Laboratory Technology.*

**Employment Pathways**

The employment pathways available to students who complete this Specialist Stream or Industry Identified Stream include:

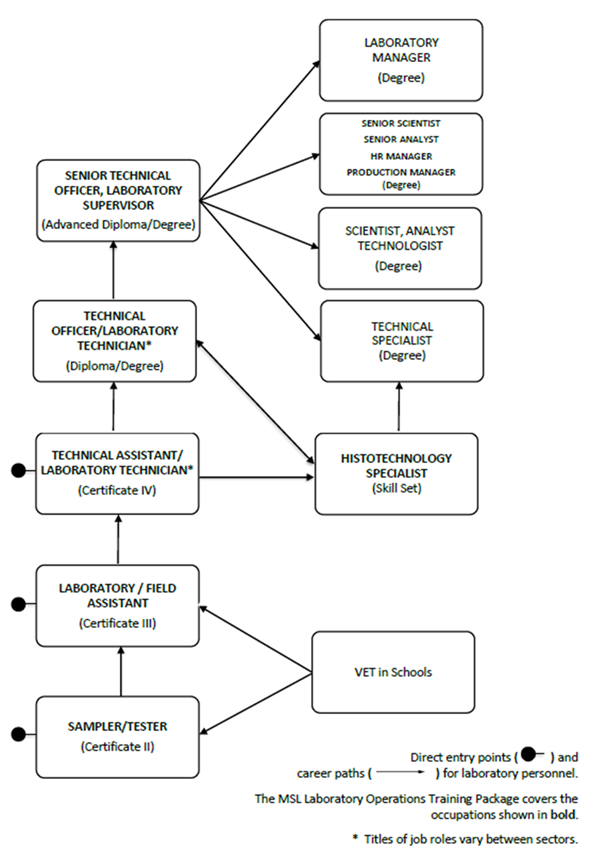


Figure 1 – Employment pathways. Taken from the MSL TP Implementation Guide. © IBSA 2017

### 1.5 Entry Requirements

The following **Training Package** entry requirements exist for this course:

Entry into this qualification is open to individuals who:

* hold a Certificate IV in Laboratory Techniques

Or

* hold a relevant Certificate IV or higher level qualification in a relevant science discipline

Or

* Can demonstrate equivalent skills and knowledge in a relevant science discipline to any of the above qualifications.

### 1.6 Exit Points

A Statement of Attainment will be issued for any unit of competency successfully completed if the full qualification is not completed

### 1.7 Units of Competency

Consistent with the qualification packaging rules, the units listed below will be delivered and assessed for this training product:

#### Core Units

Table 1 Core Units

| **No.** | **Unit Code and Unit Title** | **Unit Type and Additional Notes** |
| --- | --- | --- |
| **1** | MSL924003 – Process and interpret data |  |
| **2** | MSL924004 – Use laboratory application software |  |
| **3** | MSL925004 – Analyse data and report results | Pre-requisite required;  MSL924003 |
| **4** | MSL934004 – Maintain and calibrate instruments and equipment |  |
| **5** | MSL935007 – Monitor the quality of test results and data | Pre-requisite required;  MSL924003 |

#### Elective Units

Table 2 Elective Units

| **No.** | **Unit Code and Unit Title** | **Unit Type and Additional Notes** | **Packaging Rules**  *(Grouping, Hours and Points, where applicable)* |
| --- | --- | --- | --- |
| **1** | MSL904002 – Perform standard calibrations |  |  |
| **2** | MSL974017 – Prepare, standardise and use solutions |  |  |
| **3** | MSL954004 – Obtain representative samples in accordance with the sampling plan |  |  |
| **4** | MSL974020 – Perform food tests |  |  |
| **5** | MSL974019 - Perform chemical tests and procedures |  | Required Group B unit |
| **6** | MSL975040 - Apply routine chromatographic techniques |  | Required Group B unit  Pre-requisite required;  MSL974019 |
| **7** | MSL975046 - Perform complex tests to measure chemical properties of materials |  | Required Group B unit  Pre-requisite required;  MSL974019 |
| **8** | MSL975047 - Apply complex instrumental techniques |  | Required Group B unit  Pre-requisite required;  MSL974019 |
| **9** | MSL975048 - Apply routine spectrometric techniques |  | Required Group B unit  Pre-requisite required;  MSL974019 |
| **10** | MSL975049 - Apply routine electrometric techniques |  | Required Group B unit  Pre-requisite required;  MSL974019 |

### 1.8 Imported Units

Details of electives imported from another Training Package or accredited course.

Table 4 Imported Electives

| **No.** | **Unit Code** a**nd Unit Title** | **Release version #** | **Status** | **Release Date** | **SkillsPoint** |
| --- | --- | --- | --- | --- | --- |
| **1** | Nil |  |  |  |  |

2. Additional Information

### 2.1 Environment and Location

The **simulated** work environment will be achieved by:

TAFE NSW will integrate teaching and learning strategies, in some cases bringing together a number of units that reflect real industry outcomes, to provide a framework for industry-relevant learning. In order to meet the requirements of this training product, the simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.

The simulated work environment at TAFE NSW will include practical application in both standard and specialised laboratories with access to appropriate laboratory instruments, equipment, personal protective equipment (PPE), containment facilities, materials, manuals, workplace documentation and procedures. The use of industry specific samples, case studies, sample requests, timeframes and progressive workflows will facilitate realistic workplace conditions. The program will be delivered and assessed through tasks that will simulate specific industry environments.

Compliance with industry safety requirements is supported through the provision of PPE, Australian Standards and codes of practice, Standard Operating Procedures (SOPs), risk assessments and the legal, ethical and work health and safety (WHS) requirements specific to the work task.

There are a series of defined activities that a team of participants and individuals may achieve in a simulated work environment which is reflective of the practical application of skills in the workplace. These include:

* Practical tasks
* Group work
* Simulated laboratory environment activities including instructor led demonstration of practical tasks using competency dedicated instruments and equipment, followed by student practice.
* Classroom activities including role plays, research and questioning and discussion.

The ‘Equipment to student’ ratio will vary depending on many factors including the cost of the equipment. In some cases the ratio is 1:1 for simple items such as pH meters, yet where expensive equipment is required, there may only be one item per class. In these cases, it is intended that students gain access to equipment via ‘round-robin’ timetabling so that each student gets access to all relevant equipment. This is no different to industry practice where laboratories have one piece of expensive equipment, which is very common.

**Work placement** will be achieved by:

**Detail:**

* Nil

**Eligibility for work placement:**

* Nil

**Total Work Placement Hours:**

* Nil

### 2.2 Language, Literacy and Numeracy

Based on the Australian Core Skills Framework ([ACSF](https://www.education.gov.au/download-acsf)), please indicate which performance levels students are expected to be at the commencement of the course for each of the core skills listed in the table below.

For assistance in determining the LLN level of performance please consult with your relevant Learning Support Services.

Table 4 Language, Literacy and Numeracy

| **Level of Performance** | **PL1A&B** | **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- | --- | --- |
| **Learning** |  |  |  |  |  |  |
| **Reading** |  |  |  |  |  |  |
| **Writing** |  |  |  |  |  |  |
| **Numeracy** |  |  |  |  |  |  |
| **Oral communication** |  |  |  |  |  |  |

### 2.3 Recognition Processes

#### Recognition of Prior Learning

Students are able to have their competency from prior learning and work experience recognised in this qualification through the following arrangements.

* Evidence of completing formal training
* Work experience: on the job experience and informal training
* Life experience: community group involvement, family activities, sports, hobbies, leisure activities, unpaid work, organising events, and/or travel.

Applications for RPL will be assessed on an individual basis and may be granted when a portfolio of evidence is assessed in accordance with TAFE NSW Recognition Policy and Procedures and the student is deemed competent for the unit/s of competency for which the application applies. Alternatively, the student may nominate to undertake a challenge assessment for the opportunity to demonstrate competency.

**Credit Transfer**

Students may also apply for credit transfer upon enrolment. The same or equivalent units of competency previously completed through an Australian RTO may be credited towards the new qualification they enrol into.

### 2.4 Educational and Support Services

TAFE NSW provides the following services to ensure a supported and successful learning environment for all students:

* Aboriginal and/or Torres Strait Islander Student Support and Services
* Accessibility and Disability Services
* Personal Counselling
* Vocational Counselling
* Learning Support
* International Student Support
* Scholarships
* Multicultural Support

Detailed current information on these Support Services are made available to staff and students at [TAFE NSW Student Services](http://www.tafensw.edu.au/support). Additionally every student is supported by a dedicated Student Services team at each campus location.

### 2.5 WHS Risk Ranking

Consult the WHS risk register for this course

This Training Product has the following WHS risk ranking High risk

Refer to the TAFE NSW Enterprise [Risk Management Policy](https://staff.tafensw.edu.au/documents/2017/11/enterprise-risk-management-policy.pdf/) for more details

### 2.6 Physical and Learning Resources

Specifically, the physical and learning resources listed below are required for the delivery and assessment of this Specialist Stream or Industry Identified Stream for this training product:

Table 5 Physical and Learning Resources

| Type | Resource Requirements |
| --- | --- |
| Facilities | AFE NSW will provide the following as suitable facilities, including:   * a standard laboratory, or, * a standard transfusion/immune-haematology laboratory with relevant equipment, * a molecular biology laboratory * a standard microbiology laboratory * a standard haematology laboratory * a computer room (or other access to computers e.g. library services or in the laboratory)   Facilities will include a classroom with computers with relevant software installed for online learning, internet access, desks, chairs, white/chalk board and projector capabilities. |
| Equipment | **MSL925004 – Analyse data and report results**  Access is required to the use of suitable facilities, equipment and resources, including data sets and records, calculator, computer and relevant software, including spreadsheets, databases and statistical packages or laboratory information system relevant workplace procedures.  **MSL935007 – Monitor the quality of test results and data**  Access is required to the use of suitable facilities, equipment and resources, including workplace quality assurance procedures based on Australian and/or international standards, and workplace quality manuals and procedures technical records of sampling and testing activities, and instrument calibration/performance records appropriate software samples, sampling and testing equipment, instruments and materials.  **MSL975046 - Perform complex tests to measure chemical properties of materials**  Access is required to the use of suitable facilities, equipment and resources, including a standard laboratory, specialised analytical instruments, laboratory reagents and equipment, standard operating procedures (SOPs) and test methods.  **MSL975047 - Apply complex instrumental techniques**  Access is required to the use of suitable facilities, equipment and resources, including a standard laboratory, specialised analytical instruments, laboratory reagents and equipment, standard operating procedures (SOPs) and test methods.  **MSL975048 - Apply routine spectrometric techniques**  Access is required to the use of suitable facilities, equipment and resources, including a standard laboratory, appropriate spectrometers, laboratory reagents and equipment, standard operating procedures (SOPs) and test methods.  **MSL975049 - Apply routine electrometric techniques**  Access is required to the use of suitable facilities, equipment and resources, including a standard laboratory, routine electrometric equipment, laboratory reagents and equipment, standard operating procedures (SOPs) and test methods. |
| Trainer and Assessor Qualifications and Industry Experience | **The following minimum requirements have been identified for trainers and assessors;**   * Minimum qualification of MSL50118 – Diploma of Laboratory Technology or equivalent. * Evidence of maintaining relevant and current industry professional development including ongoing exposure and development to maintain currency of industry skills. * TAE40116 Certificate IV in Training and Assessment or its successor **or,**   TAE40110 Certificate IV in Training and Assessment plus the following units:  TAELLN411 (or its successor) **or** TAELLN401A, **and,**  TAEASS502 (or its successor) **or** TAEASS502A **or** TAEASS502B **or,**   * A diploma or higher level qualification in adult education. * Evidence of maintaining Training and Assessment Qualifications and Professional Development, including ongoing development in current training and assessment practice. |
| Learning Resources | Each unit to have a set of comprehensive unit notes, class activities, practical task with relevant drawings and instructions, teaching and learning resources, assessments and RPL documents which will be available on the Learning Bank. Supporting resources such as policies, procedures, management plans will be available on the Learning Bank and through a Simulated Organisation developed by TAFE Digital.  Online teaching and learning and assessment capabilities. Software packages such as Laboratory Information Management Systems (LIMS, simulated or real), Microsoft Word, and Microsoft Excel are all available on classroom computers.  Access to library services including books, E-Books, industry journals and magazines, on-line data base specific to trade profile. Access to trade relevant multimedia learning materials. Access to policies and procedures, WHS legislation, regulations and codes of practice, Australian Standards, manufacturer instructions, industry legislation, forms and templates such as checklists, hazard reports, quality assurance, work plans and the like. |

### 2.7 Industry Engagement

Training and assessment practices must be relevant to the needs of industry and informed by industry engagement, this may also influence resources and staff currency. Details below are of the most current engagement activities undertaken for this training product.

Table 6 SkillsPoint Engagement

| No. | Industry/Organisation | Representative Name | Contact Details  (Email/Telephone) | Date of Consultation | How did this engagement influence one or more of the following?   * Qualification/ Course / Skill set selection * Elective selection and/or sequencing * Mode of study * Training Methods * Assessment Methods * Trainer and assessor requirements * Training and assessment resources and equipment * Contextualisation |
| --- | --- | --- | --- | --- | --- |
| **1** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Personal care, household chemicals, detergents, therapeutics and cosmetic products * Oil * Pharmaceuticals * Food/agriculture * Chemicals   Diagnostic laboratories   * Biomedical * Pathology * Veterinary * Biosecurity   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Research laboratories   * Biomedical * Chemical   Other laboratories   * Food safety * Inspection and verification * Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_01  MRS\_18\_05\_MSL50118\_IER\_02  MRS\_18\_05\_MSL50118\_IER\_03  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_05  MRS\_18\_05\_MSL50118\_IER\_06  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_10  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_12  MRS\_18\_05\_MSL50118\_IER\_13  MRS\_18\_05\_MSL50118\_IER\_14  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_20  MRS\_18\_05\_MSL50118\_IER\_21  MRS\_18\_05\_MSL50118\_IER\_22  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_01  MRS\_18\_05\_MSL50118\_IER\_02  MRS\_18\_05\_MSL50118\_IER\_03  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_05  MRS\_18\_05\_MSL50118\_IER\_06  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_10  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_12  MRS\_18\_05\_MSL50118\_IER\_13  MRS\_18\_05\_MSL50118\_IER\_14  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_20  MRS\_18\_05\_MSL50118\_IER\_21  MRS\_18\_05\_MSL50118\_IER\_22  MRS\_18\_05\_MSL50118\_IER\_24 | 23/11/18  28/11/18  31/8/18, 26/10/18  29/11/18  20/12/18  26/10/18  26/10/18  21/11/18  19/11/18  31/8/18, 7/9/18  16/11/18  14/1/19  7/12/18, 19/12/18, 16/1/19  23/10/18  14/11/18  20/11/18  31/10/18  26/10/18  6/12/18  7/11/18  19/11/18  23/10/18 | **Qualification Selection**  Feedback was gathered from a broad cross sector of laboratory operations stakeholders, there was coverage of the following sectors; biomedical pathology, education support, agriculture and biosecurity, veterinary and plant health, pharmaceutical, therapeutics and cosmetics, food safety and quality, chemical and environmental, inspection and verification.  Stakeholders included both private and public providers, industry associations as well as a combination of diagnostic, research, analytical and manufacturing facilities. Various sources were used to gain feedback on the skills and knowledge required by the laboratory operations industry. Specific needs were identified by stakeholders through surveys, written responses, verbal feedback and described in current job advertisements.  **Feedback**  Stakeholder feedback described the skills and knowledge required for job roles and in some cases indicated the preferred qualification by name. Despite sector diversity, core skills and knowledge consistently aligned, the main differentiation was the need for specific skills and knowledge in the areas of pathology, chemistry and food testing.  Core themes identified:   * In almost all cases safety was mentioned often with an emphasis on chemical handling and waste management. * Understanding of quality management systems, quality assurance, accreditation and related standards was often identified as essential. * The majority of job roles required some kind of sample reception and processing as well as data entry skills. Only one stakeholder, a public education support laboratory felt this skill was not useful, contrasted by support of the skills by a private education support facility. * The need for skills and knowledge in maintaining and/or calibrating laboratory instruments/equipment echoed by all industry sectors but emphasized by industries performing chemical testing. * The ability to multi-task, shift priorities and meet deadlines quickly was a recurring theme across all sectors. * Written and verbal communication skills were identified as important for multiple stakeholders. * The majority of stakeholders also specifically mentioned working as part of a team. * Analysing data and reporting results and monitoring trends and the quality of test results as well as familiarity with laboratory application software and laboratory information management systems was identified as very important by multiple employers.   **Action**  Stakeholder feedback described the skills and knowledge required for job roles which were matched to the MSL50118 Diploma in laboratory technology with MSL40118 Certificate IV in Laboratory techniques qualification as the entry requirement.  The Certificate IV entry qualification was identified as appropriate to address the themes identified above as the following units are core:   * MSL944002 Maintain laboratory or field workplace safety * MSL934006 Apply quality system and continuous improvement processes * MSL953003 Receive and prepare samples for testing * MSL924003 Process and interpret data (Also Diploma core) * MSL934004 Maintain and calibrate instruments and equipment (Also Diploma core)   The remaining themes are addressed in the Diploma as the following units are core:   * MSL924004 Use laboratory application software * MSL935007 Monitor the quality of test results and data * MSL925004 Analyse data and report results   To meet the needs of the differentiated sectors TAFE NSW has packaged three industry streamed qualifications in the areas of pathology, chemistry and food testing.  As skills must be demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies training and assessment should include:   * communication skills as they relate to specific unit job roles * multi-tasking, time management and may include shifting priorities * working as part of a team where required for specific job roles * use of computer application software appropriate for data entry and processing e.g. LIMS, access or excel |
| **2** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Chemicals   Diagnostic laboratories   * Biomedical * Pathology   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Research laboratories   * Chemical   Other laboratories   * Food safety   Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | 31/8/18, 26/10/18  26/10/18  22/2/19  21/11/18  31/8/18, 7/9/18  23/10/18  14/11/18  20/11/18  31/10/18  26/10/18  23/10/18 | **Mode of Study**  A range of stakeholders from a diversity of sectors included biomedical pathology, food safety, education support, chemical manufacturing as well as chemical, food, agricultural and pharmaceutical diagnostic and analytical services indicated their preference for the mode of study.  **Feedback**  The preference for the mode of study to include face to face training was unanimous. The majority of stakeholders agreed that face to face at a TAFE NSW campus or in the workplace combined with online learning would be the best option.  A national stakeholder that provides high quality, analytical testing for the food, agricultural and environmental industries in Australia commented that ‘social media and internet are so powerful now days that it makes sense to mix online and face to face.’  **Action**  TAFE NSW is considering adopting a blended mode of delivery that includes online learning in combination with face to face delivery either in a simulated work environment at a TAFE NSW campus |
| **3** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Chemicals   Diagnostic laboratories   * Biomedical * Pathology   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Research laboratories   * Chemical   Other laboratories   * Food safety   Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | 31/8/18, 26/10/18  26/10/18  22/2/19  21/11/18  31/8/18, 7/9/18  23/10/18  14/11/18  20/11/18  31/10/18  26/10/18  23/10/18 | **Training Methods**  A range of stakeholders from a diversity of sectors included biomedical pathology, food safety, education support, chemical manufacturing as well as chemical, food, agricultural and pharmaceutical diagnostic and analytical services indicated their preferred training methods.  **Feedback:**  There was unanimous support for Face to face training. A private pathology stakeholder indicated online theory was acceptable but practical time should be maximised. Another stakeholder stressed the importance of using multiple training methods to ensure learning is not one sided and time for questions regarding online content should be built into face to face classes and/or through online forums (anonymous).  Theory notes with images had a majority preference. In addition to face to face and written theory notes, several stakeholders indicated a preference for voice over and/or live recorded presentations, video demonstrations and online quizzes accessible on any device 24/7.  **Action**  TAFE NSW is considering utilising a range of training methods including a combination of written theory notes with images, face to face presentations and online resources such as video demonstrations where available.  TAFE NSW is exploring the possibility of developing theory presentations with voice over and/or live recorded presentations as well as online practice quizzes and activities with immediate feedback and multiple attempts as online learning materials and activities.  Face to face classes should include time for answering questions around online content and a forum made available for students to ask and see the responses to questions submitted electronically. The ability to submit anonymous questions will be explored for implementation.  TAFE NSW is considering adopting a blended mode of delivery that includes online learning with 24/7 access to learning materials on any device supported by face to face in class demonstrations in a simulated work environment. |
| **4** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Chemicals   Diagnostic laboratories   * Biomedical * Pathology   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Research laboratories   * Chemical   Other laboratories   * Food safety   Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | 31/8/18, 26/10/18  26/10/18  22/2/19  21/11/18  31/8/18, 7/9/18  23/10/18  14/11/18  20/11/18  31/10/18  26/10/18  23/10/18 | **Assessment Methods**  A range of stakeholders from a diversity of sectors included biomedical pathology, food safety, education support, chemical manufacturing as well as chemical, food, agricultural and pharmaceutical diagnostic and analytical services indicated their preferred assessment methods.  **Feedback:**  A range of assessment methods were identified by stakeholders including:   * observations in a simulated workplace * project based skills assessment (over time with product assessment) * theory assignment (over time with ability to research) * practical exam and theory exams (specific day/time) * Workplace evidence (photos and/or videos)   A private pathology stakeholder indicated some exams could be open book where the same resources would be readily available in the workplace. For example; a cell atlas available for reference when performing microscopic cell counts and morphological classification. A multi sector analytical services stakeholder indicated workplace simulation would be acceptable as it would be difficult to cover everything in a single commercial laboratory. They also felt that single exams do not best reflect the student’s overall capability and that an assignment would be more comprehensive and fairer.  **Action**  TAFE NSW to consider using a combination of practical observations, project-based skills assessments, theory assignments and/or practical and theory exams as possible assessment methods after consideration of the assessment conditions of each unit. Where possible assessment may be conducted on the job.  TAFE NSW is also exploring the possibility of workplace evidence capture (photos and/or videos) to inform assessment decisions. |
| **5** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Chemicals   Diagnostic laboratories   * Biomedical * Pathology   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Research laboratories   * Chemical   Other laboratories   * Food safety * Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_04  MRS\_18\_05\_MSL50118\_IER\_07  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_11  MRS\_18\_05\_MSL50118\_IER\_15  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_19  MRS\_18\_05\_MSL50118\_IER\_24 | 31/8/18, 26/10/18  26/10/18  22/2/19  21/11/18  31/8/18, 7/9/18  23/10/18  14/11/18  20/11/18  31/10/18  26/10/18  23/10/18 | **Equipment**  Equipment lists were reviewed by a range of stakeholders from a diversity of sectors included biomedical pathology, food safety, education support, chemical manufacturing as well as chemical, food, agricultural and pharmaceutical diagnostic and analytical services indicated their preferred assessment methods.  **Feedback**  Although there was nothing considered missing or outdated, the requirement for data entry, sample registration and barcoding skills combined with specific mention of laboratory information management systems and the need for training in the use of laboratory application software indicated the need for access to a real or simulated laboratory information management system.  **Action**  TAFE NSW is exploring the possibility of incorporating access to a commercially available Laboratory Information Management System into all laboratory operations courses. |
| **6** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Chemicals   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Research laboratories   * Chemical   Other laboratories   * Food safety * Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_01  MRS\_18\_05\_MSL50118\_IER\_02  MRS\_18\_05\_MSL50118\_IER\_03  MRS\_18\_05\_MSL50118\_IER\_06  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_10  MRS\_18\_05\_MSL50118\_IER\_12  MRS\_18\_05\_MSL50118\_IER\_14  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_20  MRS\_18\_05\_MSL50118\_IER\_21  MRS\_18\_05\_MSL50118\_IER\_22  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_01  MRS\_18\_05\_MSL50118\_IER\_02  MRS\_18\_05\_MSL50118\_IER\_03  MRS\_18\_05\_MSL50118\_IER\_06  MRS\_18\_05\_MSL50118\_IER\_08  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_10  MRS\_18\_05\_MSL50118\_IER\_12  MRS\_18\_05\_MSL50118\_IER\_14  MRS\_18\_05\_MSL50118\_IER\_16  MRS\_18\_05\_MSL50118\_IER\_17  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_20  MRS\_18\_05\_MSL50118\_IER\_21  MRS\_18\_05\_MSL50118\_IER\_22  MRS\_18\_05\_MSL50118\_IER\_24 | 23/11/18  28/11/18, 9/1/19, 11/1/19  28/11/18  20/12/18  22/2/19  21/11/18  19/11/18  16/11/18  7/12/18, 19/12/18, 16/1/19  14/11/18  20/11/18  31/10/18  6/12/18  7/11/18  19/11/18  23/10/18 | **Elective selection**  Feedback gathered from a broad range of laboratory operations stakeholders was used to identify electives that had cross sector applications. Sector coverage included; biomedical diagnostic and research pathology, education support, agriculture, veterinary, pharmaceutical, therapeutics and cosmetics goods, food safety and quality, chemical and environmental, inspection and verification.  **Feedback**  Consultation revealed many sectors including food, pharmaceutical, biomedical, veterinary, environmental and chemical manufacturing routinely following standard operating procedures to perform chemical tests and procedures. The inclusion of MSL974019 Perform chemical tests and procedures was supported by stakeholders across the all sectors.  **Feedback**  MSL954004 Obtain representative samples in accordance with sampling plan was identified as a critical unit by a member of a food safety profession body as well as a national multi sector analytical services provider. It was explained that any analytical results without a representative homogenous sample are meaningless regardless of the quality of the test conducted. It was noted that many food samples that are currently collected are actually invalid because the person collecting them does not understand what characteristics are required for a sample to be considered representative.  Although one education support laboratory suggested this unit was not relevant in an educational setting, this was in contrast with feedback from another education support laboratory. A chemical manufacturer also identified these units as useful for medicine manufacturing under Good Manufacturing Practice (GMP) conditions.  Overall feedback from the chemical and food sectors supported the inclusion of MSL954004 Obtain representative samples in accordance with sampling plan as well as MSL974020 Perform food tests due to the number of stakeholders in these sectors conducting food testing as part of their laboratories scope of registration. It was also suggested that MSL974020 Perform food tests could be delivered before of clustered with MSL974019 - Perform chemical tests and procedures.  **Feedback**  One of Australia’s leading manufacturers of disinfectants for healthcare and industrial cleaning products indicated MSL904002 Perform standard calibrations is important in all laboratories operating under a quality system.  This unit was considered relevant in education support, manufacturing and chemical analytical services settings. In addition, skills and knowledge in calibration of equipment were outlined as required in job advertisements for a therapeutics and cosmetics manufacturer and a pharmaceutical laboratory.  **Feedback**  The food and chemistry industries emphasized the need for skills in performing chemical analytical testing on a variety of products. The inclusion of MSL975048 Apply routine spectrometric techniques and MSL975040 Apply routine chromatographic techniques were also identified as important by stakeholders from these two industries.  Two job advertisements for a manufacturer and an analytical service provider also described performing specific complex tests as requirements of the job role of laboratory technicians. The inclusion of MSL975046 Perform complex tests to measure chemical properties of materials and MSL975047 Apply complex instrumental techniques were supported by several chemical industry stakeholders.  **Action**   * MSL974019 Perform chemical tests and procedures has been included in all streamed Diploma qualifications as it has cross sector utility, is a prerequisite for other key units and supports a credit pathway from all industry focused Certificate IV qualifications. * MSL954004 Obtain representative samples in accordance with sampling plan and MSL974020 Perform food tests was only included in the chemistry and food streamed Diploma qualifications as the pathology industry required additional pathology specific units that provide greater relevance to the job roles as well as providing credit pathways from the pathology industry focused Certificate IV qualification * The following units have been included as electives in the chemistry streamed MSL Diploma qualification to meet industries identified needs. * MSL904002 Perform standard calibrations * MSL975046 Perform complex tests to measure chemical properties of materials * MSL975047 Apply complex instrumental techniques   These inclusions also support credit pathways from the chemistry focused MSL Certificate IV qualifications where MSL904002 and MSL974016 have been included as electives. |
| **7** | Public and private employer organisations performing laboratory testing or providing education support.  Manufacturing laboratories   * Chemicals   Analytical laboratories   * Chemical * Food * Pharmaceutical * Agricultural   Other laboratories   * Education support | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_24 | Please refer to Industry Engagement Record(s):  MRS\_18\_05\_MSL50118\_IER\_09  MRS\_18\_05\_MSL50118\_IER\_18  MRS\_18\_05\_MSL50118\_IER\_24 | 21/11/18  31/10/18  23/10/18 | **Contextualisation**  Some stakeholders provided specific feedback on the content of several units from their specific industry perspective.  **Feedback**  Feedback on unit content:   * MSL974019 Perform chemical tests and procedures should include   + spectrometric, gravimetric and volumetric (titrimetric) analysis   + Chromatography (LC-MS)   + Separation and extraction (liquid/liquid, solid phase, protein precipitation)   + tracking of obvious test malfunctions where the procedure is standardised * MSL975048, MSL975046, MSL975047   + Mention validation requirements such as installation qualification, operational qualification and performance qualification for the instrument. If instruments are validated change management could be included. * MSL975040 Apply routine chromatographic techniques   + HPLC and MS if available.   **Action**  TAFE NSW will consider contextualising the above units to include these suggestions. |

3. Transition Arrangements

When there is a change to the Training Package that impacts on this TAS, the SkillsPoint will work with Standards and Compliance teams to complete a Transition Plan and notify all staff affected as soon as possible.

TAFE NSW complies with clauses 1.26 and 1.27 of the *Standards for RTOs 2015*. When there are major changes to the Training Package, the SkillsPoint will review the changes made and create a plan to transition to the new training package requirements and cater for completion arrangements for students where possible. The progress of the transition will be implemented by the Delivery, Implementation and Performance and Skills Teams and monitored by Standards and Compliance teams.

Transition arrangements must be completed within 12 months of changes being published on training.gov.au for superseded qualifications and two years for deleted training products.

Does this qualification require the completion of a Transition Plan  Yes  No

If yes, a completed Transition Plan is attached.

4. Structure, Delivery and Assessment

### 4.1 Volume of Learning

**Volume of Learning** includes all activities required to be undertaken by the typical student to achieve learning outcomes. It is comprised of the Amount of Training + the Amount of Assessment + Unstructured Learning.

**Amount of Training** takes into consideration the existing skills, knowledge and experience of students, the mode of delivery, availability of resources and the number of units. It is the **Structured Learning** – formal learning activities, which may consist of

• Lectures or tutorials, on-line tasks and forums

• Learning activities

• Structured workplace experience

• Workshop activities

• Structured prescribed reading

• Prescribed follow-up activities

**Unstructured Learning** may include private study, assignment preparation, work experience and research.

A justification must be included for any differences between the **AQF Volume of Learning indicator** and the total hours in each instance of course delivery. Factors that may reduce volume of learning can include the number of units packaged in the qualification, student having pre-existing knowledge and skills, mode of delivery and clustering of units. For further information see [Fact Sheet - Amount of Training](https://www.asqa.gov.au/news-publications/publications/fact-sheets/amount-training).

The **AQF Volume of Learning indicator** for this product is: Diploma 1200-2400 hours

The **Total Amount of Training Hours** for this product is: **454**

The **Total Amount of Assessment Hours** for this Product is: **68**

The Total Estimated **Unstructured Learning Hours** for this product are: **180**

The **Total Volume of Learning** for this product is: **702**

### 4.2 Delivery Strategy

Details of the Volume of Learning for this training product are outlined below:

Table 7 Volume of Learning - Detail

| **No.** | **Delivery Mode** | **Types of Structured Learning** | **Structured Learning**  **Hours** | **Assessment Hours** | **Unstructured Learning Hours** | **Volume of Learning** |
| --- | --- | --- | --- | --- | --- | --- |
| **1** | Blended | \* Face to face learning \* Online learning (Moodle)  \* End of chapter topic tests  \* In class practice tasks  \* Group planning tasks  \* Out of class structured activities | 454 | 68 |  | 522 |
| **2** | Self-directed | \* Review of structured learning  \*Internet based research \* Assessment preparation  \* Review of topic test answers from teacher  \* Industry research and job analysis |  |  | 180 | 180 |
| **Totals** |  | | **454** | **68** | **180** | **702** |

**Outline of Delivery Strategy and Justification for variance in Volume of Learning from the AQF Indicator:**

**Course Purpose**

The Laboratory Operations Training Package services those aspects of laboratory work that are associated with either;

* Laboratories that are an integral part of manufacturing or related processes (internal labs)
* Laboratories that are privately operated, providing services to all industries (external labs)

The MSL50118 Diploma of Laboratory Technology intends to qualify individuals who apply integrated technical and theoretical concepts in a broad range of contexts to undertake advanced skilled or paraprofessional work and as a pathway for further learning. This involves scientific practices and processes as well as following statutory structured workplace procedures. The Diploma of Laboratory Technology is a non-trade (para-professional) industry endorsed course (as per IER in Table 6 above).

The Chemistry specialisation is designed to provide the graduate with a broad range of chemical analysis whilst ensuring an adequate diversity of topics such as laboratory management, work health and safety and data handling skills are also incorporated.

**Delivery sequence and structure**

Outline of Delivery Strategy and Justification for variance in Volume of Learning from the AQF Indicator:

This delivery strategy offers a **total volume of learning of 702 hours**. The AQF minimum volume of learning indicator is 1200 – 2400 hours. Below is an outline of the delivery strategy for this offering.

This course has been designed and structured in such a way to ensure a natural ‘flow’ from the Certificate IV in Laboratory Techniques (MSL40118) with the Diploma of Laboratory Technology (MSL50118). The two drivers of this model were;

* The CIV (or equivalent) is the entry requirement for the Diploma.
* The Diploma and CIV share many common elective units from the Training Package.

This results in an embedded model where students who complete the CIV will gain 15 units, 9 of which are eligible for Credit Transfer to the Diploma leaving only the 6 remaining required Group B units to complete.

It is important to note that the Certificate IV in Laboratory Techniques (CIV, or equivalent) is the prescribed requirement for entry into the Diploma. The Diploma has been designed to incorporate the CIV level units that align best to the overall Diploma ‘model’. These units should be credit transferred to the Diploma;

* MSL924004 - Use laboratory application software
* MSL974020 - Perform food tests
* MSL974019 - Perform chemical tests and procedures
* MSL904002 - Perform standard calibrations
* MSL974017 - Prepare, standardise and use solutions
* MSL934004 - Maintain and calibrate instruments and equipment
* MSL954004 - Obtain representative samples in accordance with a sampling plan
* MSL924003 - Process and interpret data
* MSL975040 - Apply routine chromatographic techniques

\*\* A cautionary note to delivery teams

As the Certificate IV is an entry requirement, there is no way to schedule any CIV unit after any Diploma unit has been started, therefore all units listed for Credit Transfer will be completed prior to the beginning of any Diploma unit. Do not prepare a timetable without the CIV being completed prior to the start of the Diploma.

**Target Student Group – Pre-employment**

This Training and Assessment Strategy (TAS) has been tailored to meet the needs of students who are ‘pre-employment’ and have no existing experience working in the laboratory industry, which is considered ‘post-school’ or paraprofessional.

This TAS pertains directly to the **Chemistry Industry Specialisation**. Industry engagement for this specialisation has been extensive and revealed that the units listed provide the appropriate balance of laboratory skill and supervisory responsibility to ensure a graduate fit for entry level employment in a chemical industry laboratory.

It is acknowledged that students entering this qualification will generally have an interest in laboratory. As the MSL40118 - Certificate IV in Laboratory techniques is an entry requirement for the Diploma, it is acknowledged students enter the course with higher level organisation & study skills and computing skills, gained through prior study and as a result of life experience in an increasingly technology-savvy world and the need to be able to interact using these technologies as a part of day-to-day life.

Class sizes will have a nominal student to teacher ratio **on average** of 15:1 based on available resources in the classroom environment.

**Volume of learning**

The volume of learning is determined based on target student group described above in ‘Target Student Group – Pre-employment’.

The training provided to students is based on the principles of Andragogy, and will acknowledge students existing skills, knowledge and experience and where possible will scaffold any learning outcomes based on these, as well as significant industry consultation.

This amount of training and assessment has been determined to ensure all students with an LLN level described under section 2.2 of this TAS document, can successfully complete each unit of competency delivered with minimal, or no need for additional support.

In this delivery strategy, the unit delivery flows in a logical sequence to ensure that initial concepts are learnt and applied which ensure that the appropriate underpinning knowledge and skills are learnt for later units. The unit delivery is in line with semester delivery to ensure adequate time and logical flow. Elective units have been chosen based on industry feedback to ensure the best outcomes and job readiness for graduate.

Course sequence ensures that all pre-requisite material is learnt prior to more senior units ensuring that students learn in the logical sequence the units were intended to be taught in.

Elective units have been chosen to cover the requisite Competence Fields from the Training Package to ensure that the integrity of the industry specialisation has been adhered to. Units have also been sequenced in the intended order of the Training Package to ensure that the Training package rules have been met as stringently as possible.

Furthermore, graduate outcomes meet minimum industry requirements and expectation, achieved through real world tasks and processes from relevant government departments where appropriate/applicable.

**Description of Structured learning and assessment**

Blended - Structured learning & assessment: in-class

With reference to the embedded nature of the CIV and Diploma courses, what follows is the course structure for the entire Diploma with the CIV embedded. This course duration is three (3) terms (27 weeks at 19 hours per week (on average) or three days per week. The Certificate IV runs for 3 terms, followed by the Diploma for 3 terms.

Students will attend 522 hours (19 hrs per week x 27 weeks) of face-to-face/blended classes over the duration of this course. Within face-to-face classes students will complete 454 hours of structured learning and 68 hours of assessment.

\*\*For specific structured learning and assessment hours for each unit, please refer to ‘Table 8 Delivery and Assessment Schedule’.

Timetabled classes will include face-to-face and online instructional sessions, laboratory demonstrations, role plays, group activities, individual tasks, practical and theory classes, projects, videos, brainstorming, and application of learning from the directed learning tasks and out of class activities.

The facilities provided by TAFE NSW provide students access to simulated work environment and the equipment required to gain a real-world experience of laboratory services that will align with their job role. The simulated environments include practical tasks in field (if required) and laboratory environments both on and off campus as well as computer labs.

Timetabled classes will also include assessments tasks that require assessor observation of supervised timed assessments, practical tasks, role plays, simulated workplace activities, project work and knowledge based assessments. All assessment occurs as specified in the assessment event instructions. Assessments will utilise on-campus resources and facilities to assess students in simulated workplace environments. Assessment methods reflect the most suitable means for assessing the required skills, providing students with the best opportunity to demonstrate their competence.

Learning resources are provided to students such as handouts, student learner workbook, unit outlines and assessment guides, which we be made available on the Learning Bank or Simulated Organisation website as required.

Out-of-class structured learning will include directed activities such as, pre-readings for timetabled classes, completing student workbook activities, practical tasks, participation in group work and forums, viewing of prescribed videos, researching specific information relating to the unit of competency and any homework of tasks set by, and monitored by the teacher.

Self-directed - Unstructured learning

This delivery strategy requires all learners to engage in 180 hours of self-paced study, research, assessment preparation, and review of class topics and practice at home or on campus. Unstructured learning is essential for learners to continue to develop a broad understanding of Laboratory concepts and application of Laboratory skills throughout the course and achieve competency.

Trainers and assessors will progressively engage students during the course through active class discussion, individual mentoring and training and assessment feedback to monitor student engagement and unstructured learning. Online resources are also available for students to engage with during unstructured learning, such as a course Moodle, accounts for LinkedIn Learning tutorials, and studiosity.com tutorial support. This will be monitored through LMS logging time stamps.

**Volume of learning variance justification**

The Volume of Learning for this Training Product is 702 Hours. This is below the range for the AQF Indicator at Diploma level, however it should be noted that students undertaking this course will receive significant Credit transfer from completing the Certificate IV in Laboratory Techniques, with Credit Transfer reducing the Diploma units required by 47%. Furthermore, VoL reduction is also achieved by the following;

**1) Cohort industry/education background = 10%**

Students will have completed a Certificate IV in Laboratory Techniques as required for entry and as such will have ‘Mid-level existing skills’ which results in a VoL reduction of 10%.

**2) Entry LLN Levels Required = 15%**

The expected entry level LLN requirements for this course in line with ACSF sums to 15% reduction in VoL due to ACSF scores of 4 as entry level requirements for **Learning**, **Reading** and **Writing**, **Oral communication** and **Numeracy** skills due to the scientific nature of the course.

**3) Cohort Age Group VoL reduction = 4%**

The historical enrolment data shows the typical cohort age range is 18-34. This cohort range brings more current skills and knowledge than younger cohorts, yet not as many life skills as older cohorts. The Volume of Learning provided calculates the VoL reduction at 4% for this cohort.

**4) Qualification Licensing/Registration requirements VoL reduction = 2%**

There are no licensing requirements for this course resulting in an approximate reduction in VoL of 2%

**5) Qualification UoC’s Quantity VoL reduction = 2%**

The total number of total units (15), is equal to the median number of units across all courses, as per the VoL calculator provided.

**6) Course structure of training VoL reduction = 2%**

Although clustering can optimise learning outcomes, this course has not opted for clustering due to industry requests that certain topics be strengthened such as Communication and Planning skills. To ensure that industry needs and expectations are met regarding student outcomes, all units will be delivered as standalone units without clustering. This applies to all AQF levels within the MSL training package.

**7) Course mode of delivery VoL reduction = 6%**

The Volume of Learning calculator provided scores the Course mode of delivery as a 6% reduction in VoL based on a mix of Face-to-Face and Online (Blended).

**This results in an overall reduction in the Volume of Learning = 47%**

### 4.3 Assessment

*Table 8* below provides a description of the sequencing of units throughout the program. It also outlines the delivery strategy, the mode (face to face, online, workplace, etc.), the hours of training and assessment required and the assessment methodology.

#### Assessment Method Legend

The assessment methods used for this training product are as follows:

**Sk Skills** (role play scenario, presentation, practical, observation)

**Kn Knowledge** (multiple choice, true or false, short answer questions)

**Pro Project** (report, research based project, journal, essay)

**CS Case study** (case study scenario, reflection)

**TLB Training Log Book**

**Prt Portfolio** (samples of work in a workplace environment)

**O Other** (add description)

#### Delivery and Assessment

Table 8 Delivery and Assessment Schedule

| **Sequence.** | **Unit Code and Unit Title** | **Cluster Group #**  **Or Stand Alone** | **Unit Delivery Mode** | **Training and Assessment Hours** | **Unit**  **Start and End dates** | **Assessment:**  **Methods and Weighting**  *(refer to legend)* | **Assessment: Due Dates** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | MSL924004 - Use laboratory application software |  | Credit Transfer or RPL |  |  |  |  |
| **1** | MSL974020 - Perform food tests |  | Credit Transfer or RPL |  |  |  |  |
| **1** | MSL974019 - Perform chemical tests and procedures |  | Credit Transfer or RPL |  |  |  |  |
| **1** | MSL904002 - Perform standard calibrations |  | Credit Transfer or RPL |  |  |  |  |
| **2** | MSL974017 - Prepare, standardise and use solutions |  | Credit Transfer or RPL |  |  |  |  |
| **2** | MSL934004 - Maintain and calibrate instruments and equipment |  | Credit Transfer or RPL |  |  |  |  |
| **2** | MSL954004 - Obtain representative samples in accordance with a sampling plan |  | Credit Transfer or RPL |  |  |  |  |
| **2** | MSL924003 - Process and interpret data |  | Credit Transfer or RPL |  |  |  |  |
| **2** | MSL975040 - Apply routine chromatographic techniques |  | Credit Transfer or RPL |  |  |  |  |
| **3** | MSL925004 - Analyse data and report results | Stand alone | Blended | T = 32  A = 4 |  | Kn – Short answer 1  Kn – Short answer 2  Kn – Short answer 3 |  |
| **3** | MSL975049 - Apply routine electrometric techniques | Stand alone | Blended | T = 93  A = 15 |  | Kn – Short answer 1  Kn – Short answer 2  Sk – Practical 1  Sk – Practical 2  Sk – Practical 3 |  |
| **3** | MSL975048 - Apply routine spectrometric techniques | Stand alone | Blended | T = 93  A = 15 |  | Kn – Short answer 1  Kn – Short answer 2  Sk – Practical 1  Sk – Practical 2  Sk – Practical 3 |  |
| **3** | MSL975047 - Apply complex instrumental techniques | Stand alone | Blended | T = 93  A = 15 |  | Kn – Short answer 1  Kn – Short answer 2  Sk – Practical 1  Sk – Practical 2  Sk – Practical 3 |  |
| **3** | MSL975046 - Perform complex tests to measure chemical properties of materials | Stand alone | Blended | T = 93  A = 15 |  | Kn – Short answer 1  Kn – Short answer 2  Sk – Practical 1  Sk – Practical 2  Sk – Practical 3 |  |
| **4** | MSL935007 - Monitor the quality of test results and data | Stand alone | Blended | T = 50  A = 4 |  | Kn – Short answer 1  Kn – Analysis 2  Kn – Review 3  Kn – Review 4 |  |

5. Master TAS Approval

**Product Manager**

Name: asamuelson (Adam.Samuelson@tafensw.edu.au) Adam Samuelson

Signature: Approval was given electronically in LAMS (see request 6806):

<https://live.nei.tafensw.edu.au/DATA2/Site/Approvals/step2.aspx?request_id=6806>

Date: 28/02/2020, 11:32 AM

**Head of SkillsPoint**

Name: pfarrow5 (Paul.Farrow3@tafensw.edu.au) Paul Farrow

Signature: Approval was given electronically in LAMS (see request 6806):

<https://live.nei.tafensw.edu.au/DATA2/Site/Approvals/step2.aspx?request_id=6806>

Date: 03/03/2020, 03:28 PM

PART B – Delivery TAS Information

6. Delivery Details

**Delivery Location**

Campus:

Region:

**Offering Owner**

Name:

ebs Identifier:

**Mode/s of Delivery**

Face to Face Learning

Workplace Training

Online Learning

Blended

Other:

**Details of Target Student Group**

**Duration**

Total Hours:

Total Weeks:

Start and End Date:

### 6.1 Entry Requirements

The following **local entry requirements** exist for this course:

### 6.2 Additional Student Support at Delivery Location

The following additional Student Support is available:

### 6.3 Contextualisation

Following from the Delivery Strategy outlined in Section 4 above, the following arrangements have been made to contextualise delivery of this Training Product to meet the needs of this student group:

7. Third Party Arrangements

Are any training and assessment components for this product delivered by a third party, and if so has the required written agreement been put in place?  Yes  No

If yes, please provide a summary of the third party arrangement:

Have the details of this arrangement been attached?  Yes  No

Have details of this arrangement been provided to TAFE NSW Governance, Legal and Risk?  Yes  No

Has ASQA been notified of this arrangement prior to any delivery commencing?  Yes  No

8. Staff Qualifications and Industry Experience

Insert link to detailed staff matrix.

Table 9 Staff Matrix

| **No** | **Units of Competency Delivering / Assessing**  (multiple units can be grouped together) | **Trainer/ Assessor Name** | **Trainer, Assessor or Both** | **Training and Assessment Qualifications**  **AND**  **Current evidence of ongoing development in training and assessment practice**  *(including correct title, name of provider and date)* | * **Vocational Qualifications** * **Licences** * **Professional development including ongoing exposure and development to maintain currency of industry skills**   *(including correct title, name of provider and date)* |
| --- | --- | --- | --- | --- | --- |
| *Delete this row after completing table* | *RII30915 - Certificate III in Civil Construction (Release 1)*  *RIIBEF201D*  *RIICOM201D*  *RIIOHS201D* | *Joe Bloggs* | Trainer only | * TAE40110 Certificate IV in Training and Assessment – ABC Training 23 November 2016. * VELG Assessment Practices Workshop 5 June 2018. * HTAN Training News Update Breakfast Meeting 26 March 2018. * ASQA Training Provider Briefing Session June 2018 | * BCC30107 - Certificate III in Civil Construction – XYZ Training 17 June 2008. * RII30913 - Certificate III in Civil Construction – Bendigo Kangan Institute – 03 June 2013 * CPCCOHS1001A - Work safely in the construction industry - XYZ Training 3 Sep 2009. * Construction Australia Expo, Brisbane, 11 March 2017 * Australian Building Codes Board Seminar, Canberra, 20 October 2017 * Civil Engineer operating own consultancy from 2005-current. |
| **1** |  |  | Choose an item. |  |  |
| **2** |  |  | Choose an item. |  |  |
| **3** |  |  | Choose an item. |  |  |
| **4** |  |  | Choose an item. |  |  |
| **5** |  |  | Choose an item. |  |  |
| **6** |  |  | Choose an item. |  |  |
| **7** |  |  | Choose an item. |  |  |
| **8** |  |  | Choose an item. |  |  |
| **9** |  |  | Choose an item. |  |  |
| **10** |  |  | Choose an item. |  |  |
| **11** |  |  | Choose an item. |  |  |
| **12** |  |  | Choose an item. |  |  |
| **13** |  |  | Choose an item. |  |  |
| **14** |  |  | Choose an item. |  |  |
| **15** |  |  | Choose an item. |  |  |
| **16** |  |  | Choose an item. |  |  |
| **17** |  |  | Choose an item. |  |  |

9. Additional Industry/Community Engagement

Training and assessment practices must be relevant to the needs of industry and communities and be informed by consultation, this may also influence resources and staff currency. Details below are of further engagement activities undertaken for this training product at a Regional/Local level.

Table 10 Additional Industry/Community Engagement

| **No** | **Industry/Organisation** | **Representative Name** | **Contact Details**  **(Email/Telephone)** | **Date of Consultation** | **How did this engagement influence one or more of the following?**   * Qualification/ Course / Skill set selection * Elective selection and/or sequencing * Mode of study * Training Methods * Assessment Methods * Trainer and assessor requirements * Training and assessment resources and equipment * Contextualisation |
| --- | --- | --- | --- | --- | --- |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |
| **5** |  |  |  |  |  |
| **6** |  |  |  |  |  |
| **7** |  |  |  |  |  |
| **8** |  |  |  |  |  |
| **9** |  |  |  |  |  |

10. Assessment Validation

Validation is the quality review of the assessment processes and judgements. Validation involves checking that the assessment tool/s produce/s valid, reliable, sufficient, current and authentic evidence that complies with the appropriate AQF level and the dimensions of competency to enable reasonable judgments to be made as to whether the requirements of the training package or VET accredited courses are met. It includes reviewing a statistically valid sample of the assessments and making recommendations for future improvements to the assessment tool, process and/or outcomes and acting upon such recommendations.

Clause 1.9 and 1.10 of the Standards for RTOs require that the RTO implements a plan for ongoing systematic validation of assessment practices and judgements; the plan needs to ensure that each training product is validated at least once every five years, with at least 50% of products validated within the first three years of each five year cycle.

### 10.1 Validation of assessment judgements

Details of the scheduled validation of judgements for the training product identified in this Training and Assessment Strategy are provided below:

Table 10 Validation of assessment judgements

| **Date of last validation of judgements** | **Codes and names of units validated** | **Number of judgements included in the sample for each unit** | **Have the actions arising from the validation been completed and signed off? If No, please outline below outstanding actions and when they are due for completion** | **Scheduled date of next validation of judgements** |
| --- | --- | --- | --- | --- |
| Click here to enter a date. |  |  | Yes No | Click here to enter a date. |

Location of validation record:

Details confirmed by:

Signature:

11. Delivery TAS Approval

The signatures below indicate that the Delivery Team meets the requirements of the Master Product outlined above. Any additional Contextualisation must be outlined in a Business Case and referred back to the SkillsPoint - details in Part A above.

**Delivery Location**

Campus:

Region:

**Team Leader (or equivalent)**

Name:

Signature:

Date:

**Head of Skills Team**

Name:

Signature:

Date:

**Head of Delivery, Implementation and Performance**

Name:

Signature:

Date: