# Skills Assessment

**Assessment event 3 of 3**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MSL973013 - Perform basic tests (1)

### Qualification/Course code, name and release number

MSL30118 - Certificate III in Laboratory Skills (1)

MSL40118 - Certificate IV in Laboratory Techniques (1)

\*\*Amend the qualification box before distributing to the student. The information here should only contain the qualification the student is enrolled in\*\*

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For queries, please contact:

Innovative Manufacturing, Robotics and Science SkillsPoint

Hamilton Campus

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This assessment can be found in the: [Learning Bank](https://share.tafensw.edu.au/share/access/searching.do?doc=%3Cxml%2F%3E&in=P7ac4831b-430a-4b8d-8b56-f7b32ed5b9cf&q=&type=standard&sort=rank&dr=AFTER)

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## Assessment instructions

Table 1 Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Instructions for the trainer and assessor** | This is a skill based assessment and will be assessing the student on their ability to demonstrate skills required in the unit.  This assessment is in 3 parts:   1. Practical 2. Observation Checklist 3. Assessment Feedback (Student Facing Document only)   The tests for this skills assessment must be the same tests the student researched in assessment event 2: Project Assessment. You must observe each of the three tests during your scheduled laboratory session/s.  Students may refer to their class notes during this assessment. They should also have access to their marked event 2: Project Assessment during this assessment and they should hand it back to you at the end of this skills assessment.  Liaise with laboratory staff to ensure the laboratory including all equipment/reagents are available for the student on the designated assessment date. This will include having unknowns prepared and the values for these identified. For example: the Brix analysis will require a number of sucrose solutions to be prepared and one of these should be identified as the control with the value provided to the student for comparison (suggested values for samples between 5 and 15 % sucrose).  For pH, a buffer solution should be provided as the quality control (check) sample with the student and the student provided with the value for this solution.  For each test that you choose for this assessment you must ensure that the student has the following available, as applicable to the test:   * the sample to be tested * the equipment/instrument for the test * safety Data Sheets (SDSs) required for the test * standard Operating Procedures (SOP) for the test * standard test methods * disposal facilities * their marked Project Assessment (assessment event 2), including feedback.   You need to ensure that the standard operating procedures and test methods are retained with the completed student assessments for audit purposes.  Benchmark responses are provided for each of the test/measurements identified in Group A and B for the Project Assessment. This response is to be filed with the student assessment for audit purposes.  Model answers, sample responses or criteria for each task or activity are provided below.  Use these to support your judgement when determining a satisfactory result.  The student’s response to each question must contain the information indicated in this marking guide in order for their response to be correct. However, if a student provides information other than indicated below, and in the professional opinion of the assessor it is appropriate and meets the intent of the question, it may be considered correct.  Complete the Observation Checklist for each task and activity and the Assessment Feedback to the student. Ensure you have taken a copy of the assessment prior to it being returned to the student.  The Assessment Feedback page must be signed by both the student and the assessor so the student displays that they have received, understood and accepted the feedback.  Ensure the students name appears on the bottom of each page of the submitted assessment. |
| **About this marking guide** | The student’s response to each task or activity must contain the criteria indicated in this marking guide in order for their response to be correct.  All tasks and activities must be completed correctly in order to satisfactorily complete this assessment event.  Assessors will need to make a judgement call as to whether each response meets the criteria based upon the:   * Rules of Evidence:   + Validity – does the answer address the skill required and does the evidence reflect the four dimensions of competency?   + Sufficiency – is the task or activity sufficient in terms of length and depth?   + Currency – has the work been done so recently as to be current?   + Authenticity – is this work the student’s own authentic work? * Principles of Assessment   + Fairness – individual student’s needs are considered in the assessment process   + Flexibility – assessment is flexible to the individual student   + Validity – any assessment decision is justified, based on the evidence of performance of the student   + Reliability – evidence presented for assessment is consistently interpreted and assessment results are comparable irrespective of the assessor conducting the assessment * Dimensions of competency   + Task skills   + Task Management Skills   + Contingency Planning Skills   + Job Role Environment Skills |
| **Student must provide** | Calculator, pens, class notes, PPE (safety glasses, enclosed shoes, laboratory coat or protective clothing). |
| **Assessor must provide** | Organisational paperwork as required (standard methods, SOPs, SDS) or know where the student can obtain them during the assessment session.  One copy of each of the SOPs required by the student for the allocated test/measurement. The following test methods are available on Learning Banks should you choose to use them.  *M116 Calibration of thermometer, measuring temperature of equipment*  *M118 Determination of basic soil parameters, pH, conductivity, moisture*  *M120 Determination of density by various techniques*  *M122 Determination of sugar in food sample using Brix hydrometer*  *M409 Bacterial classification and identification*  Personal Protective clothing for self (safety glasses, laboratory coat or protective clothing). |
| **Due date/time allowed/venue** | To be advised/ 3 hour laboratory session (or several sessions adding to 3 hours). |

## Specific task instructions

The instructions and the criteria in the tasks and activities below will be used by you to determine whether the tasks and activities have been satisfactorily completed.

In assessment event 2 Project Assessment, the student has researched three basic tests/measurements that they complete in the laboratory. In the Skills Assessment you will be observing the student completing each of the three tests/measurements.

The student is to complete the table below for the 3 allocated tests/measurements allocated to their Project Assessment.

Table 2 Complete the table

|  |  |  |
| --- | --- | --- |
| Test | Test/Measurement | I have practiced this test prior to this assessment |
| 1. |  | Yes / No |
| 2. |  | Yes / No |
| 3. |  | Yes / No |

## Part 1: Practical

To complete this part of the assessment, the student is required to participate in a practical demonstration of three tests/measurements.

These demonstrations will be observed by you.

The student’s responses will be used as part of the overall evidence requirements of the unit.

You should refer to the list of criteria provided in the Observation Checklist to understand what skills the student is required to demonstrate in this section of the assessment. This Checklist outlines the Performance Criteria, Performance Evidence and Assessment Conditions you will be marking the student on. There is a Laboratory Record to be completed for each test/measurement.

Once completed, the student is required to submit this assessment and the tasks and activities required to be completed to you for marking.

The following are general guidelines to be followed by the student for each of the three tests/measurements. Not all steps may be required (the actual test steps will depend on the task allocated and the individual SOP or standard method).

1. **Prepare for the tests**
2. obtain the sample and note the sample ID and description on the Laboratory Record Sheet (note in the comments section if there are any discrepancies in the observed sample to that epected)
3. determine the test to be conducted.
4. locate the standard method for the test allocated
5. locate the SOP for any instruments required
6. note any hazards and controls related to the method
7. list all the PPE, equipment and reagents required for the test
8. obtain the SDS for any chemicals noted on the standard method and record the hazards, PPE etc. required.
9. **Conduct the test**
10. wear correct PPE and prepare the sample in accordance with the method (note on the Laboratory Record sheet the type of preparation required for the test. This could be a direct reading, or weighing or dilution etc.)
11. ensure that wastes are kept to a minimum
12. ensure all equipment is set up according to the SOP and conducting pre-use and safety checks. Report any issues and note on the Laboratory Report Form
13. prepare any calibration standards that are required according to the method
14. conduct any calibration required for the instrument completing any laboratory paperwork
15. conduct the test as required noting any problems that may occur and how these were actioned on the Laboratory Record Sheet
16. record all data for the sample and any standards
17. shutdown the instrument/equipment according to the SOP.
18. **Complete the test**
19. perform any calculations required for the test
20. report the final result according to Laboratory procedures
21. dispose of any waste materials according to laboratory procedures
22. complete any instrument logs
23. clean the laboratory and equipment
24. store equipment/instrument as required by the procedure.

Laboratory Record: Test/Measurement

The information contained in this report is confidential and issued without alteration

|  |  |  |  |
| --- | --- | --- | --- |
| Date: 99/99/9999 | Analyst Student name | | Sample ID Soil ABC |
| Sample Description Soil | | Test required pH by probe | |
| Standard Method: Basic soil parameters (pH, conductivity, moisture) | | SOP M118 | |
| SDS/SOP information  PPE Safety glasses, enclosed footwear, laboratory coat  Spill control sweep up dry soil  Wipe up spilt water  Disposal Water down sink, soil to bin | Hazards  Electrical connections  Slips if water spilt on floor | | Controls  Inspect leads and tag and tested  Clean up as soon as any spill occurs |
| Equipment required: 2 mm sieve to screen soil.  Calibrated pH meter (calibration should be in the area of the expected value for the sample)  thermometer for checking solution temperature  beakers to place sample in  wash bottle to clean the probe  tissues to dry off the probe  3M KCl standing solution for the probe | | Sample preparation: Air dried sample sieved (2 mm sieve) and then water added to known mass | |
| Pre-use and safety checks  Satisfactory  Yes  No  NA | | Actions if required | |
| Calibration results Buffer run as standard  pH 4 buffer read 4.1 | | Calibration status  Satisfactory  Yes  No | |
| Raw data and observations Sample readings 5.5, 5.6, 5.5  Noted that probe took a long time to stabilise. May need to look at cleaning of probe  (This is fictional data. Exact numbers will depend on the individual sample) | | Calculations (see worksheet if required)  None required | |
| Safe shutdown  Yes  No  NA | | Instrument log completed  Yes  No  NA | |
| Disposal method: Down the drain for liquid, solid wrapped in paper and in normal refuse | | Safe disposal  Yes  No  NA | |
| Equipment clean and stored  Yes  No  NA | | Laboratory cleaned  Yes  No  NA | |
| Reported Result | | 5.5 | |
| Comments: Sample read 3 times as probe reacting slowly  Student would note if the sample was different than expected | | | |
| Analyst signature | | SDFDGFYTRHTSH | |

Skills Assessment: Calculation additional space.

|  |  |  |
| --- | --- | --- |
| Analyst Student name | Test Soil pH | Date 99/99/9999 |
| *This space is provided for additional space for the recording of results and calculations. It must be submitted with your Assessment task even if you do require the space.* | | |

Laboratory Record: Test/Measurement

The information contained in this report is confidential and issued without alteration

|  |  |  |  |
| --- | --- | --- | --- |
| Date: 99/99/9999 | Analyst Student name | | Sample ID |
| Sample Description Clear colourless liquid | | Test required Brix determination | |
| Standard Method: Determination of Brix in general food products | | SOP M122 | |
| SDS/SOP information NA There is no SDS for this sample, Response taken from SOP  PPE Enclosed footwear, safety glasses, laboratory coat  Spill control Clean up spills of sample immediately  Disposal Wash down sink unless instructed otherwise | Hazards  Use of glass containers  Manual handling in sample size reduction | | Controls  Training in use of equipment |
| Equipment required Brix hydrometer  250 mL measuring cylinders  Water bath | | Sample preparation Subsampling from bulk container | |
| Pre-use and safety checks  Satisfactory  Yes  No  NA | | Actions if required | |
| Calibration results NA | | Calibration status  Satisfactory  Yes  No | |
| Raw data and observations  Hydrometer reading on water = 0  Temperature of solution = 20oC  Brix of sample = 12.5  Brix on QC sample = 10 | | Calculations (see worksheet if required)  There is no correction factor as water value is 0 Bx and temperature of all solutions is 20oC | |
| Safe shutdown  Yes  No  NA | | Instrument log completed  Yes  No  NA | |
| Disposal method: Down the drain | | Safe disposal  Yes  No  NA | |
| Equipment clean and stored  Yes  No  NA | | Laboratory cleaned  Yes  No  NA | |
| Reported Result | | Sample Bx = 12.5  QC sample = 10 | |
| Comments:  Student would note if the sample was different than expected | | | |
| Analyst signature | | SDFDGFYTRHTSH | |

Skills Assessment: Calculation additional space.

|  |  |  |
| --- | --- | --- |
| Analyst Student name | Test Brix determination | Date 99/99/9999 |
| *This space is provided for additional space for the recording of results and calculations. It must be submitted with your Assessment task even if you do require the space.*  Not required | | |

Laboratory Record: Test/Measurement

The information contained in this report is confidential and issued without alteration

|  |  |  |  |
| --- | --- | --- | --- |
| Date: 99/99/9999 | Analyst Student name | | Sample ID PRLG25 |
| Sample Description Polished rice/long grain | | Test required Bulk density | |
| Standard Method: Determination of density by various techniques | | SOP M120 | |
| SDS/SOP information NA Information below from SOP  PPE Safety glasses, enclosed shoes, laboratory coat  Spill control Clean up with dustpan  Disposal In normal refuse | Hazards  Manual handling  Electricity (balance) | | Controls  Training  Tag and test, check leads |
| Equipment required Plastic 1 L measuring cylinder (or designated container)  Electronic balance (3 dp) | | Sample preparation Sample Size reduction down to ~ 500 g (use of riffle is suggested) | |
| Pre-use and safety checks  Satisfactory  Yes  No  NA | | Actions if required | |
| Calibration results NA | | Calibration status  Satisfactory  Yes  No | |
| Raw data and observations  Volume of test material 250 mL  Mass of test material 247 g | | Calculations (see worksheet if required)  Bulk density = 247 / 250  = 0.99 g cm-3 | |
| Safe shutdown  Yes  No  NA | | Instrument log completed  Yes  No  NA | |
| Disposal method: In solid waste container | | Safe disposal  Yes  No  NA | |
| Equipment clean and stored  Yes  No  NA | | Laboratory cleaned  Yes  No  NA | |
| Reported Result | | Bulk Density = 0.99 g cm-3 | |
| Comments:  Student would note if the sample was different than expected | | | |
| Analyst signature | | SDFDGFYTRHTSH | |

Skills Assessment: Calculation additional space.

|  |  |  |
| --- | --- | --- |
| Analyst Student name | Test Bulk density | Date 99/99/9999 |
| *This space is provided for additional space for the recording of results and calculations. It must be submitted with your Assessment task even if you do require the space.*  NA | | |

Laboratory Record: Test/Measurement

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|  |  |  |  |
| --- | --- | --- | --- |
| Date: 99/99/9999 | Analyst Student name | | Sample ID Lab Oven 8 |
| Sample Description Drying oven | | Test required Operating temperature of drying oven | |
| Standard Method: Calibration of thermometer, measuring temperature of sample/equipment | | SOP M116 | |
| SDS/SOP information  PPE Safety glasses, enclosed shoes, laboratory coat  Spill control NA  Disposal NA unless a thermometer breaks | Hazards  Equipment is hot  glass thermometer | | Controls  Training  Care with glass |
| Equipment required Calibrated thermometer that will read at least to 120o C | | Sample preparation Drying oven allowed to preheat and come to constant temperature | |
| Pre-use and safety checks  Satisfactory  Yes  No  NA | | Actions if required | |
| Calibration results Thermometer has current calibration status | | Calibration status  Satisfactory  Yes  No | |
| Raw data and observations Oven readings: 105oC, 106oC, 107oC | | Calculations (see worksheet if required)  Not required | |
| Safe shutdown  Yes  No  NA | | Instrument log completed  Yes  No  NA | |
| Disposal method: NA | | Safe disposal  Yes  No  NA | |
| Equipment clean and stored  Yes  No  NA | | Laboratory cleaned  Yes  No  NA | |
| Reported Result | | Average temperature 106oC | |
| Comments: Temperature is within the control limits of the oven temperature  Student would note if the sample was different than expected | | | |
| Analyst signature | | SDFDGFYTRHTSH | |

Skills Assessment: Calculation additional space.

|  |  |  |
| --- | --- | --- |
| Analyst Student name | Test | Date 99/99/9999 |
| *This space is provided for additional space for the recording of results and calculations. It must be submitted with your Assessment task even if you do require the space.*  No required | | |

Laboratory Record: Test/Measurement

The information contained in this report is confidential and issued without alteration

|  |  |  |  |
| --- | --- | --- | --- |
| Date: 99/99/9999 | Analyst Student name | | Sample ID CT31 |
| Sample Description Liquid containing bacteria | | Test required Catalase test | |
| Standard Method: Bacterial classification and identification | | SOP M409 Part 6.5 | |
| SDS/SOP information  PPE Safety glasses, enclosed shoes, laboratory coat  Spill control Gloves to be worn, sample wiped up with cloth and this placed in hazardous waste container.  Disposal Slides in sharps bin | Hazards  naked flame  bacterial samples  sharps (glass slide) | | Controls  no flammables in vicinity  training in use of bacteria samples |
| Equipment required   * Glass slides * Inoculation needle * Bunsen burner * Sterile transfer pipette | | Sample preparation  Aseptic transfers required | |
| Pre-use and safety checks  Satisfactory  Yes  No  NA | | Actions if required | |
| Calibration results | | Calibration status  Satisfactory  Yes  No | |
| Raw data and observations  Negative control slide shows no reaction  Sample slide shows vigorous bubbling | | Calculations (see worksheet if required) | |
| Safe shutdown  Yes  No  NA | | Instrument log completed  Yes  No  NA | |
| Disposal method: Slide placed in sharps container  Area cleaned down and sanitised | | Safe disposal  Yes  No  NA | |
| Equipment clean and stored  Yes  No  NA | | Laboratory cleaned  Yes  No  NA | |
| Reported Result | | Bacteria was positive to catalase test | |
| Comments:  Student would note if the sample was different than expected | | | |
| Analyst signature | | SDFDGFYTRHTSH | |

Skills Assessment: Calculation additional space.

|  |  |  |
| --- | --- | --- |
| Analyst Student name | Test | Date 99/99/9999 |
| *This space is provided for additional space for the recording of results and calculations. It must be submitted with your Assessment task even if you do require the space.*  Not required | | |

## Part 2: Observation Checklist

The Observation Checklist will be used by you to mark the students’ performance in each of the Skills occurrences. Use this Checklist to understand what skills the student is required to demonstrate in this section of the assessment. This Checklist outlines the Performance Criteria, Performance Evidence and Assessment Conditions you will be marking the student on. All the criteria must be met. The student’s demonstration will be used as part of the overall evidence requirements of the unit. You may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed.

Table 3 Observation Checklist

| TASK | Instructions | Test 1 | | | Test 2 | | | Test 3 | | | Assessor Comments  *Assessors are to record their observations in sufficient detail to demonstrate their judgement of the student’s performance against the criteria required.* |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Test ID |  | | |  | | |  | | |
|  | Date |  | | | | | | | | |
|  |  | S | US | NA | S | US | NA | S | US | NA | The assessment will be stopped for any breach of safety |
| 1. Prepare for the test | | | | | | | | | | | |
|  | Obtains the sample and notes the sample ID and description on the Laboratory Record (noting any discrepancy to the expected sample description). |  |  |  |  |  |  |  |  |  | *Student can identify the correct sample container and records as per benchmark responses provided* |
|  | Determines the test to be conducted and records on the Laboratory Record Sheet |  |  |  |  |  |  |  |  |  | *Student can identify the requested test and records as per benchmark responses provided* |
|  | Locates the standard method for the test allocated (Records the method ID on the Laboratory Record) |  |  |  |  |  |  |  |  |  | *Student locates correct method and records as per benchmark responses provided* |
|  | Locates the SOP for any instruments required (records the SOP identification on the Laboratory Record) |  |  |  |  |  |  |  |  |  | *Student locates SOP and records as per benchmark responses provided* |
|  | Notes any hazards and controls indicated in the method |  |  |  |  |  |  |  |  |  | *Student records hazards and controls as identified in the procedures* |
|  | Lists all the equipment and reagents required for the test on the Laboratory Record Sheet |  |  |  |  |  |  |  |  |  | *Student uses procedures to determine equipment and notes as per benchmark responses provided* |
|  | Obtains the SDS for any chemicals noted on the standard method and records the hazards, PPE etc. required. Uses SOP if there is no SDS for the task |  |  |  |  |  |  |  |  |  | *Student locates SDS for tests if required and records as per benchmark responses provided* |
| 1. **Conduct the test** | | | | | | | | | | | |
|  | Prepares the sample in accordance with the method (notes on the Laboratory Record Sheet the type of preparation required for the test) |  |  |  |  |  |  |  |  |  | *Student should have on correct PPE. Student prepares sample according to test procedure and has noted sample preparation as per benchmark responses provided* |
|  | Ensures that wastes are kept to a minimum |  |  |  |  |  |  |  |  |  | *Student should not have excess reagents left over.*  *The general requirement is that students take the amount required + 5%. Assessor should not that copious amounts of solution are not taken* |
|  | Ensures all equipment is set up according to the SOP and conducts pre-use and safety checks. Reports any issues |  |  |  |  |  |  |  |  |  | *Set-up is as per procedure. All checks should be completed and found OK before test commences*  *If faults, non-compliance etc are found this should be recorded on the Laboratory Report form and also the information passed on to someone.* |
|  | Prepares any calibration standards that are required according to the method (note on Laboratory Report Sheet) |  |  |  |  |  |  |  |  |  | *May not be required, is test/measurement dependent* |
|  | Conducts any calibration required for the instrument completing any laboratory paperwork (Record on the Laboratory Record or NA) |  |  |  |  |  |  |  |  |  | *Only if required for the test/measurement* |
|  | Conducts the test as required noting any problems that may occur and how these were actioned |  |  |  |  |  |  |  |  |  | *Test should provide a result. For example the analyst has noted the meter is slow to respond, indicating probe may require cleaning. The student should indicate if there were problems how these were actioned.* |
|  | Records all data for the sample and any standards |  |  |  |  |  |  |  |  |  | *All raw data is recorded as per benchmark responses* |
|  | Shuts down the instrument/equipment according to the SOP (16) |  |  |  |  |  |  |  |  |  | *Instrument/equipment shutdown safely following procedures:*  *This could be leaves power off*  *Wipe down probes* |
| 1. **Complete the test** | | | | | | | | | | | |
|  | Performs calculations as required |  |  |  |  |  |  |  |  |  | *Benchmark calculation processes are shown as required. There is additional workspace on a worksheet provided. As per benchmark responses* |
|  | Reports final result |  |  |  |  |  |  |  |  |  | *Final result recorded after any adjustments are made as per benchmark responses.*  *If adjustments had been made the student would make comment in the comment section indicating the calibration was out or any quality standard differed from expected* |
|  | Disposes of waste materials Records information |  |  |  |  |  |  |  |  |  | *Student should have consulted the SDS and procedure to determine the best process, for example*  *Liquids (unless from a contaminated site or containing identified ions such as silver, lead, mercury) placed down the sink.* |
|  | Completes instrument logs |  |  |  |  |  |  |  |  |  | *Completes and submits Laboratory record sheet* |
|  | Cleans Laboratory and equipment |  |  |  |  |  |  |  |  |  | *Assessor should ensure that all equipment has been washed according to procedures.*  *As per benchmark responses.* |
|  | Stores equipment/instruments |  |  |  |  |  |  |  |  |  | *As per benchmark responses.* |