# Project Assessment 2

**Assessment event 3 of 3**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MSL913004 - Plan and conduct laboratory/field work (1)

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

MSL30118 - Certificate III in Laboratory Skills (1)

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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 project based assessment and will be assessing the student on their knowledge and performance of the unit.  This assessment is in 2 parts and includes an Assessment Feedback form:   1. Product 2. Assessment Checklist   Model answers, sample responses or criteria for each question are provided below.  Use these to support your judgement when determining a satisfactory result.  The student’s project/product must contain the information indicated in this marking guide in order to deem it satisfactory. 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 criteria, it may be considered correct.  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.  Complete the assessment feedback to the student and ensure you have taken a copy of the assessment prior to it being returned to the student. |
| **About this marking guide** | All tasks and activities must be responded to correctly in order to satisfactorily complete this assessment event.  Assessors will need to make a judgement call as to whether each answer/response meets the criteria based upon the:   * Rules of Evidence:   + Validity – does the answer address the assessment question and does the evidence reflect the four dimensions of competency?   + Sufficiency – is the answer 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, PPE (safety glasses, enclosed shoes, laboratory coat) |
| **Assessor** must **provide** | * Marked Project Assessment 1 (event 2 of 3) for each student * PPE for self (safety glasses, enclosed shoes, laboratory coat) * Computers loaded with Excel * The equipment identified by the students in their plan   For each student: 1 container of approximately 50 g mixture of sand, salt and sawdust, in a known, but approximate ratio of 40 g sand: 8 g salt: 2 g sawdust. Each sample container should be labelled with an individual sample Code such as A, B, C or 1, 2, 3 etc.  For each team: 50mL of 4 unknown sugar samples labelled S1, S2, S3, S4 having the concentrations of 7.5%, 11.0%, 6.0% and 8.0% sugar as well as two QC samples labelled QC7.5% and QC12.5%. These same solutions can be reissued the second session for analysis. The Assessor should introduce these solutions approximately 45 minutes from the beginning of the start of the laboratory session.   * There should be a water bath on and at temperature of 37oC from the commencement of each laboratory session. |
| **Due date and time allowed** | TBA / 3 x 2 hour sessions in the laboratory with 15 minutes reading time of this Assessment prior to the commencement of session1. |

## Specific task instructions

The instructions and the criteria in the tasks and activities below will be used by you to determine if the student has satisfactorily completed this assessment event. Use these instructions as a guide to ensure they have demonstrated the required knowledge.

The student is be provided with their marked Project Assessment 1 containing their planning information for the tasks to be completed during the three scheduled laboratory sessions.

The three laboratory tasks required in order to complete the necessary paperwork are:

**Task A** (to be completed individually) Determination of the % composition of a sample of sand, salt and sawdust.

**Task B** (individual) Monitor and record the temperature of the laboratory water bath (every 45 minutes from the beginning of the session and at least two measurements being taken) and complete the control chart provided.

**Task C** (team based) Urgent analysis of four samples for % sugar by refractometer along with quality control check samples of 7.5% and 12.5%. The results must be ready within 45 minutes of arrival at the laboratory. The team is to be provided with the two QC sugar solutions and 4 unknown sugar solutions at some time during the Task. The team has 45 minutes to provide the value for each unknown solution. The team will be required to prepare the standards as per your method. The student is permitted to use Excel for the calculation or graph the standards.

All laboratory equipment identified in student plans should be available for use during the sessions.

Students are to ensure they leave enough time prior to the end of the session to make the work area safe and to clean up and put equipment back.

## Part 1: Product

You have 15 minutes to read the task prior to the commencement of the Laboratory Session.

To complete this part of the overall assessment, you will be required to:

* complete the scheduled tasks on each of the two 2 hour sessions allocated following your plan prepared for Assessment 2 (with a third session for the finalisation of Task A if required)
* have completed tasks individually and as part of a team
* complete the documentation attached to this Assessment.

Once completed you will need to submit this assessment to your assessor for marking.

**Laboratory Task:**

Your Assessor will observe you completing your plan for Tasks A, B and C.

**Note:** At all times safety is paramount and the Assessment will be stopped for any safety issues.

You should obtain your Project 1 Assessment from your Assessor. You should follow the plan you documented for the individual tasks and that were documented after discussions with you team for the team task. There are 3 sessions available for the completion of the tasks.

**Session 1:**

Commencement of Task A, Determine % Composition of a Sand, Salt and Sawdust mixture.

One completion of Task B, Monitoring and recording the temperature of the laboratory water bath

One completion of Task C, Determine % sugar in urgent production sample

Completing applicable parts of the Laboratory Record Sheet and Laboratory Data and Calculation sheet.

**Session 2:**

Further work on Task A.

One completion of Task B, Monitoring and recording the temperature of the laboratory water bath

One completion of Task C, Determine % sugar in urgent production sample

Completing applicable parts of the Laboratory Record Sheet and Laboratory Data and Calculation sheet.

**Session 3:**

Completion of Task A.

Additional occurrence of B or C if required.

Completion of Laboratory Task Review and any remaining sections on the Laboratory Record Sheet and the Laboratory Data Calculation Sheet.

**Physical evidence required:**

1. Laboratory Report Sheet (to be updated at each session)
2. Laboratory Data and Calculation sheet (to be updated at each session)
3. Completed Laboratory Task Review sheet (to be completed after the final session)
4. **Laboratory Report Sheet**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date: | XX/XX/20XX | Analyst | dsdfdfsfdsfd | |
| **Task A** | Determine % Composition | | | |
| Sample Code | **RS** | Sample Description | | Granular unmixed sample with 3 obvious components |
| % Sand | **90.2%** | Problems noted/resolution/change of procedure  Small pieces of sawdust visible in the final sand component. If time permitted perhaps dry the sand and try the floatation again | | |
| % Salt | **7.9%** | Problems noted/resolution/change of procedure  Smooth separation of the salt. | | |
| % Sawdust | **1.9%** | Problems noted/resolution/change of procedure  Some sawdust was lost in the sand component. | | |

**Task B** Monitoring of water bath temperature

*All information contained in this document is confidential. The document is issued without alteration*

**Laboratory Report Sheet**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Task C | Determine % Sugar | | | | | |
| Date | QC 7.5% | QC 12.5 | Sample 1 | Sample 2 | Sample 3 | Sample 4 |
| XX/XX/20XX | 7.5 | 12.4 | 7.4 | 11.0 | 6.1 | 8.1 |
| XY/XX/20XX | 7.5 | 12.4 | 7.5 | 10.9 | 6.1 | 8.0 |
| Analyst comments/notes:  QC standards are running well, indicating the sample numbers are valid  Analyst signature: An Analyst  *All information contained in this document is confidential. The document is issued without alteration* | | | | | | |

1. **Laboratory Data and Calculation Sheet**

**Task A** (Completed only once) The values provided are indicative only and the Assessor should relate the student values to the actual values of the sample prepared. **Note**: as long as the values are reasonable they should be accepted. This task is designed to have difficulties and students would not be expected to have perfect values in this instance. The point of this exercise is to be able to ‘think on the run’ and make changes as necessary during the task.

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Sample 1 | Sample 2 | Sample 3 |
| 1. Mass of sample taken (~5g) | 5.034 | 5.043 | 4.9993 |
| 1. Mass of evaporating basin (g) | 45.876 | 42.543 | 40.123 |
| 1. Mass of evaporating basin + salt (g) | 46.266 | 42.943 | 40.523 |
| 1. Mass of salt | 0.39 | 0.40 | 0.40 |
| 1. Mass of filter paper (g) | 2.016 | 2.132 | 1.993 |
| 1. Mass of filter paper + sawdust (g) | 2.107 | 2.228 | 2.093 |
| 1. Mass of sawdust (g) | 0.091 | 0.096 | 0.100 |
| 1. Mass of filter paper (g) | 2.081 | 1.995 | 2.104 |
| 1. Mass of filter paper + sand (g) | 6.632 | 6.539 | 6.608 |
| 1. Mass of sand (g) | 4.551 | 4.544 | 4.504 |
| 1. % sand = j / a x 100 | 90.4 | 90.1 | 90.1 |
| 1. Ave % sand = (sum % sand) / 3 | 90.2 | | |
| 1. % salt = d / a x 100 | 7.8 | 7.9 | 8.0 |
| 1. Ave % salt = (Sum % salt) / 3 | 7.9 | | |
| 1. % sawdust = g / a x 100 | 1.8 | 1.9 | 2.0 |
| 1. % sawdust = (sum % sawdust) / 3 | 1.9 | | |

In this section you are to record briefly any instances where you needed to change your plan:

Students would note any problems

typical issues in this task may include:

sawdust sinking

too much filtrate for the evaporating basin

salt reabsorbing water

**Laboratory Data and Calculation Sheet**

**Task B**.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Water Bath Identification Code | | | WB435 | | |
| **Date:** XX/XX/20XX | | | **Date:** Xy/XX/20XX | | |
|  | **Time** | **Temp (oC)** |  | **Time** | **Temp (oC)** |
| 1 | 9:15 | 37.5 | 3 | 14:00 | 36.5 |
| 2 | 10:00 | 37 | 4 | 14:45 | 36.5 |

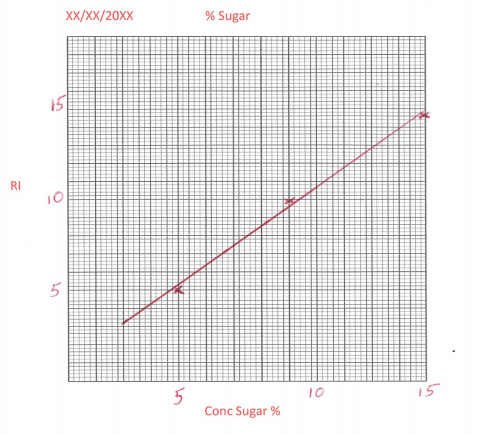
**Laboratory Data and Calculation Sheet**

**Task C** Determine % Sugar in Production Sample

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Team members | dsdfdfsfdsfd | | djgjfoinrll | |
| Date | XX/XX/20XX | | Xy/XX/20XX | |
| Time of sample arrival | 9:30 | | 14:15 | |
| Time sample result published | 10.10 | | 14:48 | |
| Standard/ Sample | Concentration % sugar | RI | Concentration % sugar | RI |
| 5 | 5 | 4.9 | 5 | 5.1 |
| 10 | 10 | 9.9 | 10 | 10.1 |
| 15 | 15 | 14.5 | 15 | 14.8 |
| QC 7.5% | 7.5 | 7.4 | 7.5 | 7.6 |
| QC 12.5% | 12.5 | 12.2 | 10.9 | 10.9 |
| Sample 1 | 7.4 | 7.3 | 6.1 | 6.2 |
| Sample 2 | 11.0 | 10.7 | 8.0 | 8.1 |
| Sample 3 | 6.1 | 6.0 | 7.5 | 7.6 |
| Sample 4 | 8.1 | 7.9 | 12.4 | 12.3 |
| Equation of line if using Excel | y = 0.96x + 0.1667 | | y = 0.97x + 0.3 | |
| R2 value | 0.9994 | | 0.9997 | |

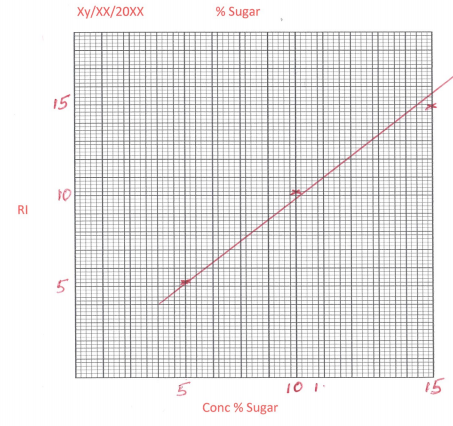
**Laboratory Data and Calculation Sheet**

Date: XX/XX/20XX



The only information required from the Excel graph is the equation of the line and the R2 value, the student is not expected to print off and include in the Assessment

Date: Xy/XX/20XX



The only information required from the Excel graph is the equation of the line and the R2 value, the student is not expected to print off and include in the Assessment

1. **Laboratory Task Review**

Date: … Xy/XX/20XX ………. Technician … **dsdfdfsfdsfd** ………..

Consider the overall Project tasks and respond to each of the items in the table below:

These benchmark responses are indicative and are designed to show the scope of answers that could be provided for the Tasks.

|  |  |
| --- | --- |
| 1. Where in your procedure did you find unexpected problems and how were these overcome? | Student may make references to:   * Sand and sawdust not separating completely requiring lots of floatation separations. * The timing of the introduction of Task C may have caused an issue, the team had to stop what they were doing and focus on the new Task. Issues here included was it safe to stop work on Task A and B to concentrate on C * There may have been issues with the use of balances if there were a large number of students and groups. This could have been overcome by requesting more balances for the next session, changing the plan so they were not weighing at the same time as others. |
| 1. Circle any of the problem solving strategies listed that you and your team used to solve problems during the task. | * Gathered information * Asked questions * Defined the problem * Brain storming * Identified various options * Mind mapping |
| 1. Explain how your original plan changed when the urgent samples arrived. How did the team work together to get the result out on time? | Students had no idea when Task C was to arrive and could only provide approximate task order in their plan. Perhaps all team members originally were going to stop Task A and B to work on C, this could have changed to one person stopping and working on C while the other person continued with their Task A until a safe place to stop and then swap over with the other member to complete the task. |
| 1. What interpersonal communication strategies were important during your team interactions? | Avoiding conflict and listening to the ideas of the other team member.  Asking questions to clarify ideas  Clearly identifying what the tasks were for the team and what were the individual tasks |
| 1. Circle the conflict resolution techniques that would be useful during this task if there had been conflict between team members. | * Remaining calm * Active listening * State your idea tactfully * Avoid the ‘blame game’ * Focus on moving forward, not backwards * Be empathetic |
| 1. Who in the laboratory could you discuss issues that cannot be resolved easily? | Speak with the trainer or the Laboratory technical officer |
| 1. What do you consider your strengths in this task? | (Student could have any of the following as examples there is no specific number required, some students will think they could do it all without any problem, while others may identify only one such as “turning up”. At this introductory level students rarely have an acceptance of what they are good at, only what they don’t know)  Planning the task  Organising equipment for the task |
| 1. What do you consider your weaknesses in this task? | As commented above in ‘g’ but this time as weaknesses other examples could include  Poor time management  Poor communication skills particularly when stressed for example Task C |
| 1. How would you change your plan if you had to complete this task in the future? | Ensure full understanding of the tasks to be completed.  Utilise time better by preparing equipment first to avoid congestion at balances and refractometer |
| 1. What sources of help or assistance was available to you and the team for this task? How did you access this? | Trainer was in the laboratory supervising the safety aspects. They were available if required,  Assistance requested by speaking with them for example do you know when the urgent samples will arrive or how much longer have we until the result is due. |

## Part 2: Assessment Checklist

The student’s copy of the Assessment Checklist will be used by you to capture evidence of their performance in any type of project. This checklist outlines all the required criteria you will be marking the student on. All criteria must be met. The following checklist contains benchmark responses for you to use when assessing to ensure reliability of judgement. You may ask questions during the demonstration or if appropriate directly after the assessment has been completed noting that both the question and student response needs to be captured on the checklist.

| Task/  Step | Instructions | Session 1 Date: | | Session 2 Date: | | Session 3 Date: | | Assessor Comments |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | S | US | S | US | S | US | *Assessors are to record their observations in sufficient detail to demonstrate their judgement of the students performance against the criteria.* |
|  | *Note: this Assessment will be stopped for any breach of safety.*  *Student is to undertake tasks within the environment of the simulated TAFE laboratory* | | | | | | | |
| **1** | Student accesses their original plan contained in Project 1, at the commencement of each session |  |  |  |  |  |  | *Student refers to procedure steps approved in Assessment event 2 Project 1* |
| **A** | Student completes Task A during the 3 scheduled sessions by following Project 1 documents and referring to procedure documentation provided in Appendices of Project 1.  Student records all data on the required Laboratory Data and Calculation Worksheet, the Laboratory Report Sheet |  |  |  |  |  |  | *Assessor observes the student following the steps required to complete Task A. The student will follow approved steps from Project 1 and the related procedure provided in the Appendices of Project 1.*  *Student completes appropriate sections of Laboratory Data and Calculation Worksheet, and Laboratory Report Sheet, as per completed sample benchmark response provided.* |
| **B** | Student completes Task B during 2 of the scheduled sessions by following Project 1 documents and referring to procedure documentation provided in Appendices of Project 1.  Student records all data on the required Laboratory Data and Calculation Worksheet and the Laboratory Report Sheet |  |  |  |  |  |  | *Assessor observes the student following the steps required to complete Task B. The student will follow approved steps from Project 1 and the related procedure provided in the Appendices of Project 1.*  *Student completes appropriate sections of Laboratory Data and Calculation Worksheet, and Laboratory Report Sheet, as per completed sample benchmark response provided.* |
| **C** | Student as part of a Team completes Task C during 2 of the scheduled sessions by following Project 1 documents and referring to procedure documentation provided in Appendices of Project 1.  Student records all data on the required Laboratory Data and Calculation Worksheet and the Laboratory Report Sheet |  |  |  |  |  |  | *Assessor observes the student following the steps required to complete Task C. The student will follow approved steps from Project 1 and the related procedure provided in the Appendices of Project 1.*  *The assessor observes the student working as part of a team and contributing to the overall team goals by completing their assigned parts of the task.*  *Student completes appropriate sections of Laboratory Data and Calculation Worksheet, and Laboratory Report Sheet, as per completed sample benchmark response provided.* |
| **2** | Student completes the Laboratory Task Review |  |  |  |  |  |  | *Student completes Laboratory Task Review as per completed sample benchmark response provided* |