VAAL UNIVERSITY OF TECHNOLOGY

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LEARNER GUIDE

Faculty	Applied and Computer Sciences
Department	Natural Sciences
Course	Biotechnology
Subject	LABORATORY PRACTICE 1 AND 2 ABBLP1A AND ABBLP2A
Year	2025
NQF Level	7
Credits	7

1.1 WORD OF WELCOME

The Natural Sciences department welcomes you to the Faculty of Applied and Computer Sciences at the Vaal University of Technology. Although Work Integrated Learning is industry based, the institution is still responsible for your training. The department hopes you make a positive contribution to the biotechnology industry and apply the theoretical knowledge that you have gained.

1.2 CONTACT PERSONS

Responsible Persons	**Department**	**Contact details**	**Office location**
Zinhle Marrengane WIL-COORDINATOR	Natural Sciences (Biotechnology)	016 950 9885 zinhlem@vut.ac.za	F 312 B
Ms R Mphuthi	Natural Sciences (Biotechnology)	refilwe@vut.ac.za 016 950 9448	F 202
Simon Mohlala Industrial- liaison officer	COOPERATIVE-EDUCATION	016 950 9341 simonmo@vut.ac.za	N106
Carlen dos Santos (submission of reports)	COOPERATIVE-EDUCATION	carlen@vut.ac.za 016 950 9161	N106
Malejone Moqhoba	STUDENT ADMISSION AND REGISTRATION registration	016 950 9781 malejone@vut.ac.za (capturing of marks on ITS) wilregistration@vut.ac.za (submission of documents for registration) B block – apply for graduation. Details for NSFAS	CW 016

1.3 RATIONALE

Work integrated learning is aimed at the integration and application of the theoretical knowledge gained at the University into the workplace environment. It should be clearly understood that the student when he/ she arrives at your institution he/she has only completed four semesters of theoretical and laboratory training and is initially not capable of making a substantial contribution to your business. It is only through the assistance and training they receive from you that they will become useful assets during their training period. Thus, be prepared to invest in preparing this student to become competent.

1.4 PREREQUISITES

The student must have completed all the subjects from semester 1 till semester 4 to enrol for work integrated learning.

1.5 LEARNING MATERIAL

The content of this learning guide is a guideline for WIL for the duration of 12 months for Laboratory Practice 1 and laboratory Practice 2.

The materials gathered during studies at the University as well as any material that may be supplied/required by the respective employer/training institution will be of benefit to the learner. The learner must also seek information through the available resources to be better equipped to fulfil expectations of the employer.

1.6 WIL REGISTRATION

Please register no later than four weeks after placement. Be mindful or registration cycles. Cycle 1 closes on the 31st March and cycle 2 closes on the 30th September. Refer to COOP booklet provided.

Registration can be done in person or online at wilregistration@vut.ac.za

Information on the registration form must be typed. Select whether P 1 or P 2 on the form.

Duration for P 1 and P 2 is SIX months each. You cannot register for P 2 until P 1 marks are on ITS.

WIL registration takes place at CW-25 (Student Admission & Registration). For more information regarding WIL registration, please contact:

Ms Malejone Moqhoba
Tel: 27(0)16-950-6730
Fax: 27(0)16-950-9772
Email: **malejone@vut.ac.za**

The following documents are COMPULSORY for WIL registration:

1. Registration form
2. Appointment / Confirmation letter from company
3. Proof of payment
4. Certified copy of ID
5. Proof of residence
6. Certified copy of Gr 12 certificate
7. International students must also submit the checklist

The WIL registration form (downloadable) must be completed and signed by the student.

REGISTRATION IS REQUIRED FOR LABORATORY PRACTICE 1 AND LABORATORY PRACTICE 2.

1.7 ASSESSMENTS

P 1 has FOUR assessments. The first two must be submitted within the first six weeks of placement. Assessment 3 and 4 must be submitted on the 5th month of placement.

The information provided on the Progress report (Assessment 2) must be descriptive. It must provide a clear outline of your entire training process.

Assessment 3 and 4 must be submitted on the 5th month. The report (Assessment 4) must be signed by the Mentor/supervisor, and you must be provided with a mark based on your technical competence. Supervisor must read the report before submission. It is not compulsory to provide results if your company is uncomfortable with sharing results.

P 2 has only ONE assessment: the report due on the 5th month of placement. Reports must be accompanied by signed Mentor's declaration. Ideally this report should be on a research project. If you were not provided with a project, report on routine work. Your organisation must indicate in writing that they could not offer you a project.

Table 1: Description of P 1 assessments and weights towards the final mark

Form number	**Assessment event**	**Contribution towards final mark %**
1	Adaptation and communication skills (Supervisor)	20
2	Progress report	20
3	External evaluation of student proficiency (Supervisor)	20

N/A	Final report	40

The employer is expected to conduct the third assessment (External evaluation of student proficiency) activity during the last two months of training.

Report mark allocations

P 1 report is on routine work. Mark allocation is as follows:

Introduction – introduce your organisation, their field in Biotechnology (20%)

Roles and responsibilities – elaborate on daily weekly and monthly duties (20%)

Routine work – outline all processes and procedures involved in your routine work. Include subsections if necessary (40%).

Conclusion – highlight personal growth (5%)

References – (5%)

A mark must be provided on your technical by your supervisor/mentor under Mentor's declaration. It contributes 10% towards your final mark.

P 2 report mark allocation (Research project)

Introduction (15%)

Aims and objectives (7%)

Methods (20%)

Results and discussion (50%)

Conclusion (3%)

References (5%)

It is the responsibility of the student to compile all the reports and submit them timeously.

The reports must be submitted by post or in person to the WIL office (N106) or via email. If submitted by post or courier service, must be addressed to CO-OPERATIVE EDUCATION. Refer to the proof of registration for submission periods. Cycle 1 submission

is 05 month (May) and cycle 2 is the 11th month (November). Submissions for cycle one must reach the department no later than July 15 and cycle two submissions must be made no later than January 15. Late submissions delay registrations or graduation applications.

Supervisor's evaluation report (External evaluation of student proficiency) must be completed and stamped with the company's stamp

1.7 MODULE OUTCOMES

The purpose of the module is to equip the learner with the necessary skills that are required for a career in Biotechnology. Although the learning outcomes are given below, must
be seen as a guideline only. It is expected that the learner will be involved in some aspect of Biotechnology which will involve a biological agent (animal, plant or microorganisms) in the production of manufactured goods or services. The learner is also expected to be exposed to day-to-day responsibilities of a workplace. If possible, the student must be offered a project.

CONDITIONS OF TRAINING

- The learner works under the supervision of a training official who will assist with techniques to be applied.
- A learner must comply with all the safety rules and regulations as prescribed by the company/institution.
- The learner must adhere to the working hours and conditions as required by the training institution.
- 100% percent attendance is expected from the learner. Urgent leave has to be arranged or discussed with the relevant personnel.
- A learner is expected to be in training for consecutive 12 months and final evaluation can only be done once the period is completed. Any interruption in the training must be communicated to the WIL coordinator
- A learner will be visited by the co-ordinator at least once during training for evaluation and discussions with the training official (s) for monitoring purposes.
- In the event of change of training institution during this period, the coordinator must be informed and change of company forms must be submitted. The forms are available on the website.

ASSESSMENT 1: ASSESSMENT IN THE WORKPLACE

NAME OF THE STUDENT: _____

STUDENT NUMBER: _____

DATE: _____

INSTRUCTION: Evaluation to be conducted by the immediate supervisor.

1. Relations with fellow colleagues

- ☐ Exceptionally well accepted
- ☐ Works well with others
- ☐ Gets along satisfactorily
- ☐ Has some difficulty working with others
- ☐ Works very poorly with others

2. ATTITUDE- WORK RELATED

- ☐ Outstanding in enthusiasm
- ☐ Very interested and industrious
- ☐ Average in diligence and interest
- ☐ Somewhat indifferent
- ☐ Not interested

3. DEPENDABILITY

- Completely dependable
- Above average
- Usually dependable
- Sometimes neglectful or careless
- Unreliable

4. ABILITY TO LEARN

- Learns very quickly
- Learns readily
- Average in learning
- Rather slow to learn
- Very slow to learn

5. QUALITY OF WORK

- Excellent
- Very good
- Average
- Below average
- Very poor

6. Criticism

- Accepts criticism and improves
- Accepts criticism but does not change
- Ignores criticism.
- Retaliates

7. ATTENDANCE: Regular

Irregular

8. PUNCTUALITY: Yes

No

9. OVERALL PERFORMANCE

10. Has this report been discussed with the student? YES

NO

RATED BY: _____ TITLE: _____ DEPT: _____

(SUPERVISOR)

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ASSESSMENT 2: PROGRESS REPORT

DEPARTMENT	**NATURAL SCIENCES**	**ABBLP1A**
STUDENT DETAILS NUMBER:		**STUDENT'S** POSTAL ADDRESS:
INITIALS & SURNAME:		
E-MAIL:		CELL OR TELEPHONE:
COMPANY NAME:		DIVISION:
STREET ADDRESS:		
MENTOR INITIALS & SURNAME:		
CELL OR TELEPHONE:	:	
PROGRESS REPORT SUBMISSION:		
START DATE:		END DAT :

1. Company profile

Company name:	
Type of industry:	
Number of students in training:	
Company's specialization field or products:	

2. WIL program

DEPARTMENTS OR SECTION OF PLACEMENT	DATES	
	STARTED	COMPLETED

3. Training scheduled for the next six months (Attachments are welcome)

The following table shows the training that is scheduled for the remaining period of WIL training. Supporting documentation can be attached. It is recommended that you expand on this section so that your training program is clear.

SECTION	ESTIMATED DATES	
	START	COMPLETION

ASSESSMENT EVENT 3: GENERAL EVALUATION OF STUDENT PROFICIENCY

EVALUATION REPORT

(Guidelines available on the next page)

	1	2	3	4	5
1.Theoretical Knowledge					
2. Application of Theory					
3. Use of Advanced Instruments and Equipment					
4. Skills integration/ Competences gained					
5. Working speed					
6. Accuracy					
7. Interpersonal Relations					
8. Diligence and Motivation					
9. Neatness (No parameters)					

…….. …….

Signature Date

……..

Rank/Qualification Company Stamp

Evaluation guidelines

These guidelines can be used by the assessor to do student evaluation.

Rating	Theoretical knowledge	Application of theory	Use of: advanced tools / measuring equipment	Skills integration / Competencies gained	Working speed	Accuracy	Interpersonal relations	Diligence motivation
1	Has little knowledge	Cannot apply any theory	Cannot use advanced equipment	Has not integrated any skills	Very slow and does not successfully complete any tasks	Never accurate	Does not get along with any staff	Does nothing unless instructed
2	Can recall some basic knowledge	Can apply some theory with assistance	Can use advanced equipment with assistance	Has integrated some documented skills	Never completes tasks successfully on time	Has to redo and then sometimes accurate	Can interact positively with most of the staff	Does just enough to keep out of trouble
3	Knows the basic minimum	Can apply the basic minimum theory	Can use advanced equipment to do the basic minimum	Has integrated the basic minimum documented skills	Just complete tasks successfully on time	Just meets the minimum specifications	Interact positively with all the staff	Does the minimum expected
4	Good knowledge	Can apply high level theory	Can select and use advanced equipment independently	Effectively integrate skills as needed in practical applications	Normally complete all tasks successfully before/on time	Work is always better than minimum expected	Is accepted by the staff as somebody with good personal skills	Normally looks for over and above work to do
5	Excellent knowledge	Can analyze and synthesize	Optimally select and use advanced equipment	Innovatively integrate all theoretical and practical skills to solve problems	Always complete all tasks successfully before time	Work is always excellent.	Uses personality to positively influence other staff	Ambitious and eager to prove talents beyond requirements

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FINAL REPORT FOR P1 AND P2

FINAL REPORT

COVER PAGE

DEPARTMENT	BIOTECHNOLOGY	ABBPLP1A/2A
STUDENT NUMBER:		**STUDENT'S** POSTAL ADDRESS:
INITIALS & SURNAME:		
E-MAIL:		CELL OR TELEPHONE:
COMPANY NAME:		DIVISION:
STREET ADDRESS:		
MENTOR INITIALS & SURNAME: :		CELL OR TELEPHONE:
WIL TRAINING START DATE:		END DATE :

MENTOR'S DECLARATION

MENTOR	**INITIALS AND SURNAME :**	
STUDENT	**INITIALS AND SURNAME :**	
	STUDENT NUMBER :	
	FINAL MARK :	**%**

DECLARATION

I, the above-mentioned mentor, declare that the above-mentioned student has completed the work integrated learning component of the qualification under my supervision.

The student was found competent in the outcomes as specified in the final report.

The achieved credits as specified above may be awarded to the student.

The student cannot be declared incompetent at the end of work integrated learning without the relevant communication to the WIL coordinator and supporting documents from the mentor.

Signature ***Date***

DECLARATION BY THE STUDENT

I, ……

(Full names)

hereby declare that the practical work is my own original work and that I received no help from another person in the execution thereof.

Signed on this …….. day of ……..

…….. ……

Signature Date

1.7 STRUCTURE of the final report: **Final Report**

(The **report** must be **neatly bound**, **well presented** and it must **include the following**)

Title page (PROVIDED)

Mentor's Declaration (PROVIDED)

Declaration by STUDENT (PROVIDED)

Table of contents:

Introduction:

This must give an overview of the company to demonstrate the student's role in the company (Where did the trainee fit into the organizational structure)

Roles and responsibilities:

Outline the specific functions that the trainee was required to perform during WIL.

Routine Work:

In the case where routine work is performed, it is required that the following be included in the report:

- Background information/purpose of the apparatus, instruments or equipment used
- The principles of the methods and media used. (References to laboratory manuals employed are expected).
- Results **if allowed by the company** (Clarify this with the company or institution)

Research projects

The final report for **P1** must only contain **routine work** conducted for the first six months of training.

The students are encouraged to engage in research projects that form the basis of P2 assessment. Should the company be unable to provide the student with a research project, written communication is required from the company.

Project outline for P 2

Introduction - Provide brief introduction on the company and topic

Aims, objectives and problem statement

Methods

Results and discussion

Conclusion

References