VAAL UNIVERSITY
OF TECHNOLOGY

Inspiring thought. Shaping talent.

STUDY GUIDE

Faculty	Engineering and Technology
Department	Electrical Engineering: Power
Course	Diploma in Engineering
Title	Experiential Learning 2 – EPEXL2A
Compiled By	I.K. Kyere
Year	2025
NQF Level	6
Credits	15.7

Instructional offering: Experiential Learning 2

Code: EPEXL2A

Instructional program: Diploma: Engineering: Electrical

Assessment: Continues Workplace Based Learning

Document revision: January 2025

The advisory committee approved:
November 2024

Index

1 Word of welcome

The Department of Power Engineering welcomes you as a student to the Faculty of Engineering and Technology at the Vaal University of Technology.

The Vision of the Department is to be A Leading Department in Electrical Engineering. The core values of this Department are:

- Integrity
- Honesty
- Punctuality
- Professionalism
- High academic standards
- Excellence
- Trust

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Revision dates	Document revision Advisory committee approved	January 2025 November 2024

2 General requirements

- It is the responsibility of the student to register for WBL before training commences.
  Registration may only occur once all module's required credits have been achieved.
- The student should simultaneously register for EPPRJ4A, EPEXL1A, and EPEXL2A, which are the three components of the workplace-based learning.
- The registration, completion, and submission of reports must be done according to the guidelines.
- An accredited assessor, appointed by the industry, will do the assessment of each relevant topic. This assessor must have a qualification equal to or higher than the assessment qualification.
- The student must do the training under the supervision of a mentor, which could also be the assessor if the mentor has the necessary qualifications.
- A VUT-accredited staff member will act as an examiner.
- The assessor must complete and sign all required assessor's reports before submission to VUT.
- If the mentor or assessor needs assistance, feel free to contact the coordinator at VUT (see the top of the page).
- To fulfill the requirements of the Diploma: Electrical Engineering, the student must successfully complete all academic requirements, as well as the three Workplace Based Learning components.
- Topics that are not included in the list of topics in this document but are required by the training company should be added using the Other Topics under unit 7 of the final report's evaluation rubric. Add as many topics as needed.
- Graduate attribute 12 (GA 12) must be covered in this module as part of the Engineering Counsel of South Africa (ECSA) requirements.

3 Philosophy of Teaching and Learning the subject Experiential Learning 2

The nature of the learning process for Workplace Based Learning must include but is not limited to the following:
In the workplace, the students gain knowledge and understanding in a professional and social setting.
It is expected of the student to interact with the management, mentors, technicians, and peers.
The student must also interact with the broader workplace community through an attentive reading of workplace policy and documentation. Each student starts from an initial base of knowledge and experience gained from the previous semester's subjects in focusing on the broader field of electrical engineering.
All students work from this point to build a more meaningful understanding of the practical application of previous subject matter and to enhance their ability to ask questions and find answers.
The student must learn how to deal with new situations with tough problems and unknown answers.

The following steps may guide the student in the learning process:
Articulate initial knowledge
Add to what is already known to refine and enrich it with the student's own efforts
Articulate and correct misconceptions
Make connections between different concepts as applied to the workplace
Realize the limitations of their own ideas when measuring against workplace solutions.

Create and test well-defined problems and ideas
Be concerned with the mental processes as well as the "answer"
Reflect on the way their conceptions are changing
Ask questions (what if, why, how.)

The ideal learning environment must include but is not limited to:

Initial activities are accessible to everyone and come from common experiences in the workplace
The environment is both accepting and critical
Students are made to feel free to propose their ideas without premature judgment
Students learn to support their ideas while interacting with management, mentors, technicians, and peers
Conversations take place in which all students feel they can contribute
Ideas are illustrated, and student interest engaged through demonstrations and experiments
An environment is created that fosters self-motivation among the students within the workplace
A variety of types of learning activities are used to meet the wide range of student needs
Students must develop a sense of accomplishment and satisfaction within the workplace.

The responsibilities of management, mentors, and technicians must include but is not limited to:

Help students learn the language of the discipline
Explain goals and methods
Validate the knowledge brought by each student
Create interest and generate curiosity
Encourage students to work hard
Communicate standards of judgment
Help students learn how to use language precisely
Act as a resource without directly answering every question
Provide time to puzzle, wonder, and struggle when permitted.
Provide fair criticism
Encourage collaboration
Teach the student to be an active listener and learner
Question students, so they realize the process of seeking explanations is critically important

The responsibilities of students must include but is not limited to:

Make use of initial knowledge
Think freely guided by your workplace environment
Engage in an active social process of testing and clarifying their understanding
Develop the ability to work effectively and intensely
Avoid premature judgment of themselves or others
Ask questions
Carefully consider the ideas of others
Learn to think independently and take responsibility for their actions
Value others as useful colleagues
Evaluate their progress in an objective manner

4 Module

Name:	Experiential Learning 2	EPEXL2A
Prerequisite:	300 credits	

On successful completion of this subject, the student will have basic knowledge, experience, and understanding to:

Be able to practice calibration and measurement skills

Be able to demonstrate an understanding of the basics of measurement setups, techniques, and standards applicable.

Be able to conduct functionality determination of electrical, electronic, or computer test equipment used in the specific field as practiced.

Be able to operate electrical, electronic, or computer test equipment used in the specific field as practiced.

This unit links the work covered in the previous modules in a practical manner, for analysis and practice.

5 Assessment

Assessment takes place continuously by means of a variety of methods and should include the following:

Active participation in discussions

Final Report

6 Learning Activities

When you are actively involved with Workplace Based Learning you should:

Understand what is expected of each training section you undertake in the workplace.

Ensure that you attain the outcome for each training section you undertake in the workplace since you must be declared competent to receive the credit for the subject.

Do all learning activities (exercises) as outlined by your mentor

Be well prepared for all work activities and report for work on time.

Successful completion of each activity stipulated by your mentor is compulsory.

Submit the final report fully completed and signed off by the mentor and/or manager, on time.

7 Time schedule / Semester planner

You must make sure that you adhere to all dates of all learning activities in the workplace environment.

This is a scheduler for your use to ensure punctuality.

Week	Activity
1-20	Complete a logbook of activities daily.
10	Complete the Progress Report and submit it to Co-operative Education at VUT Vanderbijlpark Campus Submit the partially completed logbook (Annexure A) to Co-operative Education at the VUT Vanderbijlpark campus.
20	Complete the Final Report and submit it to Co-operative Education at VUT Vanderbijlpark Campus Completed logbook (Annexure A) and submit to Co-operative education at VUT Vanderbijlpark campus.

Vaal University of Technology

Faculty of Engineering and Technology

Department Electronic Engineering
VUT

Final Report

Instructional offering: Workplace-based Learning

Code: EPEXL2A

Instructional program: Diploma: Engineering: Electrical

Assessment: Continues Workplace Based Learning

Document revision: January 2025

Advisory committee approved: November 2024

MENTOR'S DECLARATION - FINAL REPORT WBL (*EPEXL2A*)

STUDENT	**INITIALS AND SURNAME :**	
	VUT - STUDENT NUMBER :	
	ID NUMBER :	
	COMPANY :	
TRAINING PERIOD	**WBL :**	**TO** ***START DATE:*** ***COMPLETION DATE:***
MENTOR	**INITIALS AND SURNAME :**	
	CELL OR TELEPHONE NUMBER :	
	E-MAIL:	
ASSESSMENT	**MARK :**	**%**

MENTOR DECLARATION

I, the above-mentioned mentor, declare that the above-mentioned student has completed the workplace-based learning component (WBL) of the qualification in the mentioned period under my supervision.

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

The mark indicated above may be awarded to the student as the final result for work-place based learning (WPBL).

Mentor Signature *Mentor Initials & Surname* *Date*

VUT OFFICIAL	**FINAL MARK:**	**%**

ASSESSMENT: FINAL REPORT WBL EPEXL2A

SYLLABUS: POWER ENGINEERING

UNIT GUIDE

F= Fundamental *(Compulsory)*
C= Core *(Compulsory for specialization field)*
E= Elective *(Choice)*

	ORIENTATION / INDUCTION	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Unit 1	General introduction to your specific environment.	F				
	After completion of this unit the student should be able to do the following: Understand the policy and mission of the company as laid down in the orientation program.					

	SAFETY AND FIRST AID	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Unit 2	Industrial or Mining safety regulations as applicable	F				
	NOSA course	F				
	Basic first aid course	F				
	After completion of this unit the student should be able to do the following: Contribute to the safety, health and environment of the industry as laid down in a safety program. Demonstrate and comply with relevant OHSACT. Demonstrate and comply with NOSA safety standards.					

	BASIC HAND SKILLS	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Unit 3	Mechanical.	F				
	Electrical / Electronic / Computer.	F				
	After completion of this unit the student should be able to do the following as applicable to the discipline: Competent use of basic tools and equipment.					

	TEST EQUIPMENT	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Unit 4	Basics of test equipment	F				
	Application of test equipment	F				
	After completion of this unit the student should be able to do the following: Demonstrate the understanding of the basics of test equipment Operate electrical, electronic or computer test equipment used in the specific field.					

	COMPONENTS / DEVICES	POWER ENG	START DATE	END DATE	ASSESSOR'S USE E MARK	SIGNATURE
Unit 5	Use	F				
	Characteristics	F				
	Identification	F				
	Testing/ calibration	F				
	After completion of this unit the student should be able to do the following: Demonstrate the identification, calibration, testing or use of components/devices.					

	FAULT FINDING AND MAINTENANCE	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	SIGNATURE
Unit 6	Components	F				
	Circuits	F				
	Systems	F				
	Equipment	F				
	After completion of this unit the student should be able to do the following: Interpretation of applicable diagrams. Demonstrate the ability to do fault finding and rectification. Test / Calibrate instruments, systems or equipment.					

	CIRCUITS AND FLOW DIAGRAM DESIGN	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	SIGNATURE
Unit 7	Basic design	F				
	Computer design software	F				
	Simulation / Emulation	F				
	After completion of this unit the student should be able to do the following: Develop circuit diagrams / flow diagrams. Demonstrate the interpretation of circuits / flow diagrams. Demonstrate knowledge of simulation / emulation.					

	PROGRAMMABLE DEVICES	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	SIGNATURE
Unit 8	Programmable devices	F				
	After completion of this unit the student should be able to do the following: Programming, downloading and testing of programs for different programmable devices.					

	INSTALLATION AND COMMISSIONING	POWER ENG	START DATE	END DATE	ASSESSOR'S USE MARK	SIGNATURE
Unit 9	Plant equipment	F				
	Systems	F				
	After completion of this unit the student should be able to do the following: Show the ability to work independently in an industrial environment. Show the ability to successfully install and commission equipment or a system.					

					ASSESSOR'S USE	
					ASSESSOR'S USE	
	PROTECTION	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
Unit 10	Specifications	C				
	Implementation	C				
	After completion of this unit the student should be able to do the following: Demonstrate the sound knowledge and understanding of different types of protection and safety systems.					

					ASSESSOR'S USE	
	PROJECT	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
Unit 11	Industrial project	F				
	Documentation	F				
	After completion of this unit the student should be able to do the following: Use of project management tools. Successful completion of a project. Submit project report for assessment.					

					ASSESSOR'S USE	
	ENERGY SOURCES	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
Unit 12	DC sources	C				
	AC sources	C				
	Alternative energy sources	E				
	Converters	E				
	Inverters	E				
	After completion of this unit the student should be able to do the following: Implementation of knowledge on different types of energy sources. Implement operating principals of converters and inverters.					

	OTHER TOPICS RELEVANT TO MEASUREMENTS AND COMMISSIONING	START DATE	END DATE	ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
	Any other specialization field specific topics may be added by the mentor. The mentor must give realistic credit values to the topics.				

GRADUATE ATTRIBUTES				ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Has the student achieved all the outcomes mentioned in the marks summary page and thus achieved graduate attribute 12 of the ECSA stipulations?	**F**			**YES** ----- **NO**	