



FACULTY OF ENGINEERING AND TECHNOLOGY
ELECTRICAL ENGINEERING: POWER

LEARNING GUIDE: WORKPLACE BASED LEARNING (WBL)
CODE: DI 0824

APPROVED: ADVISORY COMMITTEE MEETING 2019

CONTACT DETAILS

DEPARTMENT	OFFICE	E-MAIL ADDRESS	TELEPHONE
Power Engineering	E109/7	johanm@vut.ac.za	016 950 9632
Head Of Department	E109/4	theresa@vut.ac.za	016 950 9929
Work Integrated Learning	N100	carlen@vut.ac.za	016 950 9161

GENERAL REQUIREMENTS

It is the responsibility of the student to register for WBL before training commence.

The registration, compilation and submission of reports must be done according to the guidelines on page 3.

An accredited assessor, appointed by industry, will do the assessment of each relevant unit.

A VUT accredited staff member will act as examiner.

The student must do the training under the supervision of a mentor.

The assessor must complete the assessment report (page 8 to14) by awarding an assessment mark for all the relevant units and signing each mark.

The mentor in collaboration with the assessor must determine a final mark and complete the Mentors declaration (page 9).

If the mentor or assessor needs any assistance feel free to contact the head of the department at VUT. (see top of page)

To fulfil the requirements of the Diploma: Engineering: Electrical, the student must successfully complete all academic requirements as well as the Workplace Base Learning component.

The syllabus is a generic WBL syllabus for the study fields of Power Engineering. The mentor can schedule the units for training.

The units marked F (Fundamental) are compulsory. The student must be certified competent in all of them.

The units marked C (Core) are study field specific. The units required by VUT for a study field is marked and is compulsory.

Units or topics that are required by the training company must be identified by the mentor and marked C. The student should be certified competent in all of them.

The topics marked E (Elective). The mentor can select topics relevant to the training company.

Topics not in the syllabus but required by the training company should be added as electives to the syllabus by the mentor (**unit 13**).

F	=	Fundamental	<i>Compulsory</i>
C	=	Core	<i>Compulsory for specialization field</i>
E	=	Elective	<i>Choice</i>

REGISTRATION AND REPORT SUBMISSION INSTRUCTIONS

Registration WBL

Registration procedure:

- Registration for WBL must be done.

Progress report WBL

Preparation and submission procedure:

- Three months after WBL training commenced a progress report must be submitted (page 4 to 7).
- Complete all the pages of the progress report (page 4 to 7).
- The report must be signed by the mentor and the student (page 7).
- The typed progress report must be submitted **by post** or in person to N100 (University Co-op office).

Final report WBL

Preparation and submission procedure:

- After completion of each unit, the unit must be assessed by the mentor and signed (page 8 to 14).
- After completing WBL the mentor must compile the mentor's declaration (page 9) and award a final mark for WBL.
- The final report must be submitted **by post** or in person to N100 (University Co-op office).

VAAL UNIVERSITY OF TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
WORKPLACE BASED LEARNING
POWER ENGINEERING



PROGRESS REPORT

Procedure to complete and submit the progress report:

- Three months after WBL commenced a progress report must be submitted (page 5 to 7).
- Complete all the pages of the progress report (page 5 to 7).
- The report must be signed by the mentor and the student (page 7).
- The typed progress report must be submitted **by post** or in person to N100 (University Co-op office).

1 GENERAL INFORMATION - PROGRESS REPORT **WBL (EPEXWBLA)**

STUDENT	NUMBER:		STUDENT'S POSTAL ADDRESS:
	INITIALS & SURNAME:		
	ID NUMBER:		
	E-MAIL:		
	TELEPHONE (WORK):		
COMPANY	NAME:		NUMBER OF EMPLOYEES:
	DIVISION:		NUMBER OF STUDENTS IN TRAINING:
	TRAINING SITE/STREET ADDRESS:		NUMBER OF ECSA REGISTERED STAFF:
			COMPANY'S SPECIALIZATION FIELD OR PRODUCTS
MENTOR	INITIALS & SURNAME:		ACCREDITED ASSESSOR: Y/N
	E-MAIL:		CELL OR TELEPHONE:
WBL PROGRESS REPORT START DATE:			END DATE :
VUT OFFICE USE : <p style="text-align: center;"><i>ACCEPTED</i> <input type="checkbox"/> <i>DECLINED</i> <input type="checkbox"/></p>			

2 UNITS COMPLETED

The following table must show the units successfully completed during the past three months.

The units can be seen on page 10 to 14.

UNIT NUMBER	UNIT NAME	DATES	
		STARTED	COMPLETED

3 UNITS SCHEDULED FOR THE NEXT THREE MONTHS

The following table must show the units that are scheduled for the next three months of training.

The units can be seen on page 10 to 14.

UNIT NUMBER	UNIT NAME	ESTIMATED DATES	
		START	COMPLETION

VAAL UNIVERSITY OF TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
WORKPLACE BASED LEARNING (WBL)
POWER ENGINEERING



FINAL REPORT

Procedure to compile and submit the final report:

- After completion of each unit the unit must be assessed by the mentor and signed. (page 9 to 14)
- After completing WBL the mentor must compile the mentor's declaration (page 9) and award a final mark for WBL.
- The final report must be submitted **by post** or in person to **N100**.

2 MENTOR'S DECLARATION - FINAL REPORT WBL (EPEXWBLA)

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 :	%
<p>MENTOR DECLARATION</p> <p>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.</p> <p>The student was found competent in the outcomes as specified in the assessment report.</p> <p>The mark indicated above may be awarded to the student as the final result for work integrated learning WBL.</p>		
<i>Signature</i>		<i>Date</i>
VUT OFFICIAL	FINAL MARK:	%

3 **ASSESSMENT REPORT WBL**
SYLLABUS: POWER ENGINEERING
TRAINING SCHEDULE

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

				ASSESSOR'S USE		
Unit 1	ORIENTATION / INDUCTION	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
	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.						

				ASSESSOR'S USE		
Unit 2	SAFETY AND FIRST AID	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
	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: <ul style="list-style-type: none"> 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. 						

				ASSESSOR'S USE		
Unit 3	BASIC HAND SKILLS	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
	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.						

				ASSESSOR'S USE		
Unit 4	TEST EQUIPMENT	POWER ENG	START DATE	END DATE	MARK	SIGNATURE
	Basics of test equipment	F				
	Application of test equipment	F				
After completion of this unit the student should be able to do the following: <ul style="list-style-type: none"> Demonstrate the understanding of the basics of test equipment Operate electrical, electronic or computer test equipment used in the specific field. 						

COMPONENTS / DEVICES				ASSESSOR'S USE E		
				POWER ENG	START DATE	END DATE
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				ASSESSOR'S USE		
				POWER ENG	START DATE	END DATE
Unit 6	Components	F				
	Circuits	F				
	Systems	F				
	Equipment	F				
After completion of this unit the student should be able to do the following: <ul style="list-style-type: none"> • Interpretation of applicable diagrams. • Demonstrate the ability to do fault finding and rectification. • Test / Calibrate instruments, systems or equipment. 						

CIRCUITS AND FLOW DIAGRAM DESIGN				ASSESSOR'S USE		
				POWER ENG	START DATE	END DATE
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: <ul style="list-style-type: none"> • Develop circuit diagrams / flow diagrams. • Demonstrate the interpretation of circuits / flow diagrams. • Demonstrate knowledge of simulation / emulation. 						

PROGRAMMABLE DEVICES				ASSESSOR'S USE		
				POWER ENG	START DATE	END DATE
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.					

Unit 9	INSTALLATION AND COMMISSIONING	POWER ENG	START DATE	END DATE	ASSESSOR'S USE	
					MARK	SIGNATURE
	Plant equipment	F				
	Systems	F				
After completion of this unit the student should be able to do the following: <ul style="list-style-type: none"> 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

Unit 10	PROTECTION	POWER ENG	START DATE	END DATE	ASSESSOR'S USE	
					MARK	SIGNATURE
	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

Unit 11	PROJECT	POWER ENG	START DATE	END DATE	ASSESSOR'S USE	
					MARK	SIGNATURE
	Industrial project	F				
	Documentation	F				
After completion of this unit the student should be able to do the following: <ul style="list-style-type: none"> Use of project management tools. Successful completion of a project. Submit project report for assessment. 						

ASSESSOR'S USE

Unit 12	ENERGY SOURCES	POWER ENG	START DATE	END DATE	ASSESSOR'S USE	
					MARK	SIGNATURE
	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: <ul style="list-style-type: none"> Implementation of knowledge on different types of energy sources. Implement operating principals of converters and inverters. 						

	OTHER TOPICS	START DATE	END DATE	ASSESSOR'S USE	
				MARK	SIGNATURE
Unit 13	Any other specialization field specific topics may be added by the mentor. The mentor must give realistic credit values to the topics.				

Evaluation guideline

This guideline 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 0-19%	Has little knowledge	Cannot apply any theory	Cannot use advanced equipment	Has not integrated any skills	Very slow and do not successfully complete any tasks	Never accurate	Does not get along with any staff	Does nothing unless instructed
2 20-39%	Can recall some basic knowledge	Can apply some theory with assistance	Can use advanced equipment with assistance	Has integrated some documented skills	Never complete 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 40-59%	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 60-79%	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 80-100%	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