



**Vaal University of Technology**  
**Faculty of Engineering and Technology**  
**Department Electronic Engineering**  
**VUT**  
**Learner Guide**

**Instructional offering:** Experiential Learning I

**Code:** EEEXL1A

**Instructional programme:** Diploma: Engineering: Electrical

**Assessment:** Continues Workplace Based Learning

**Document revision:** 23/Nov/2018

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## 1 Word of welcome

The Department of Electronic 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 department that leads in innovative knowledge and quality technology education. The core values of this Department are:

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

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## 2 Philosophy of Teaching and Learning the subject Experiential Learning I

The nature of the learning process for Experiential Learning I 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 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 the focusing on the broader field of electronic 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 measure 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 own 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 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 own actions
- Value others as useful colleagues
- Evaluate their own progress in an objective manner

### 3 Qualification information

<b>Name &amp; Code: DoE:</b>	Diploma: Engineering: Electrical DI0823 & DE0823
<b>NQF level:</b>	6

#### Rationale/Purpose of the qualification

The purpose of this qualification is to build the necessary knowledge, understanding, abilities and skills required for further learning towards becoming a competent practicing electrical engineering technician.

Specifically, the qualification provides:

A thorough grounding in mathematics, basic sciences, engineering sciences, engineering modelling, engineering design and the abilities to enable applications in fields of emerging knowledge together with an appreciation for the world and society in which engineering is practiced.

Preparation for a career in electrical engineering itself and areas that potentially benefit from electrical engineering skills, for achieving technical proficiency and to make a contribution to the economy and national development.

The educational base required for registration as a Professional Engineering Technician with ECSA.

For graduates with an appropriate level of achievement, the ability to enter a BTech degree programme.

The electrical engineering technician completing this qualification will be competent and able to display the following learning outcomes:

- Solving well defined electrical engineering problems.
- Applying scientific and electrical engineering knowledge.
- Performing electrical engineering designs.
- Conduct investigations, experiments and collate data analysis.
- Using appropriate engineering methods, skills and tools.
- Communicating technical information in a professional manner.
- Demonstrating critical awareness of the impact of the engineering activity.
- Effectively working as an individual and in teams.
- Engaging in independent learning.
- Acting professionally and ethically at all times.
- Engaging in engineering practice via work integrated learning.

Qualification knowledge profile	Dip: Engineering: Electrical credits = 360
Mathematical sciences	35 minimum credits
Natural sciences	28 minimum credits
Engineering sciences	126 minimum credits
Engineering design	28 minimum credits
Computing and IT	21 minimum credits
Complementary studies / Ethical issues	14 minimum credits
Work integrated learning	30 minimum credits

#### 4 Module

<b>Name:</b>	Experiential Learning I	EEXL1A
<b>Prerequisite:</b>	300 credits	

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

Be able qualify and quantify orientation structures and induction processes in the workplace environment

by having attend induction and orientation programs in the workplace environment.

Be able to demonstrate the understanding of the basics of test equipment.

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

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

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

#### Learning profile of the subject

Assessment profile (Bloom analysis)						Knowledge profile						Learning outcomes profile						
Lower order skills		Higher order skills				Mathematical sciences	Basic sciences	Engineering sciences	Engineering design	Computing and IT	Complementary studies / Ethical issues	Problem solving	Application of scientific and engineering Knowledge	Engineering Design	Communication	Engineering Management	Project Management	Application of Complementary Knowledge
Knowledge skills		Cognitive intellectual skills Generic																
Subject specific																		
Knowledge Remember	Comprehension Understand	Application knowledge Understanding	Analysis	Synthesis	Evaluation													
10%	5%	70%	5%	5%	5%	5%	60%	7%	20%	3%	5%	75%	5%	10%		2%	3%	

100%	100%	100%
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## 5 Assessment

Assessment takes place on a continuous basis by means of a variety of methods and should include the following:

- Active participation in discussions
- Log Book (Annexure A)
- Progress Report (Annexure B)
- Final Report (Annexure C)

### Summary

Assessment	Dates	Hours	Final mark
Final Report	Week 20	56	100%

## 6 Learning Activities

When you active involved with Experiential I 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 in order 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	5.1 Complete a logbook (Annexure A) of activities on a daily basis
10	5.2 Complete Progress Report and submit to Co-operative education at VUT Vanderbijlpark campus Submit partially completed logbook (Annexure A) to Co-operative education at VUT Vanderbijlpark campus
20	5.3 Complete Final Report and submit to Co-operative education at VUT Vanderbijlpark campus Completed logbook (Annexure A) and submit to Co-operative education at VUT Vanderbijlpark campus



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**Annexure A**

**Log Book**

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**GENERAL INFORMATION - WPBL (EEEXL1A)**

<b>STUDENT</b> NUMBER:  INITIALS & SURNAME:  ID NUMBER:  E-MAIL:  TELEPHONE (WORK):		<b>STUDENT'S</b> POSTAL ADDRESS:     CELL PHONE:
<b>COMPANY</b> NAME:  DIVISION:  TRAINING SITE/STREET ADDRESS:		
<b>MENTOR</b> INITIALS & SURNAME:  E-MAIL:		
<b>VUT OFFICE</b> USE : <span style="margin-left: 300px;"><i>ACCEPTED</i> <input type="checkbox"/></span> <span style="margin-left: 100px;"><i>DECLINED</i> <input type="checkbox"/></span>		











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**Annexure B**

**Progress Report**

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**Annexure C**

**Final Report**

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**MENTOR'S DECLARATION - FINAL REPORT WPBL (EEEXL1A)**

<b>STUDENT</b>	<b>INITIALS AND SURNAME :</b>	
	<b>VUT - STUDENT NUMBER :</b>	
	<b>ID NUMBER :</b>	
<b>COMPANY :</b>		
<b>TRAINING PERIOD</b>	<b>WPBL :</b>	<b>TO</b> <i>START DATE:</i> <i>COMPLETION DATE:</i>
<b>MENTOR</b>	<b>INITIALS AND SURNAME :</b>	
	<b>CELL OR TELEPHONE NUMBER :</b>	
	<b>E-MAIL:</b>	
<b>ASSESSMENT</b>	<b>MARK :</b>	<b>%</b>
<p><b>MENTOR DECLARATION</b></p> <p>I, the above-mentioned mentor, declare that the above-mentioned student has completed the workplace based learning component (WPBL) 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 WPBL.</p> <p><i>Signature</i> <span style="float: right;"><i>Date</i></span></p>		
<b>VUT OFFICIAL</b>	<b>FINAL MARK:</b>	<b>%</b>

ASSESSMENT:FINAL REPORT WPBL EEEXLIA

SYLLABUS: ELECTRONIC ENGINEERING

UNIT GUIDE

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

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

					ASSESSOR'S USE			
<b>TEST EQUIPMENT</b>					START DATE	END DATE	MARK	SIGNATURE
<b>Unit 2</b>	Basics of test equipment				<b>F</b>			
	Application of test equipment				<b>F</b>			
After completion of this unit the student should be able to demonstrate ability of the following: <ul style="list-style-type: none"> <li>• Demonstrate the understanding of the basics of test equipment.</li> <li>• Setup electrical, electronic or computer test equipment used in the specific field.</li> <li>• Operate electrical, electronic or computer test equipment used in the specific field.</li> </ul>								

					ASSESSOR'S USE			
<b>COMPONENTS / DEVICES</b>					START DATE	END DATE	MARK	SIGNATURE
<b>Unit 3</b>	Use				<b>F</b>			
	Characteristics				<b>F</b>			
	Identification				<b>F</b>			
	Testing/ calibration				<b>F</b>			
After completion of this unit the student should be able to demonstrate ability of the following: Demonstrate the identification, calibration, testing or use of components/devices.								

FAULT FINDING AND MAINTENANCE					ASSESSOR'S USE	
					START DATE	END DATE
<b>Unit 4</b>	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"> <li>• Interpretation of applicable diagrams.</li> <li>• Demonstrate the ability to do fault finding and rectification.</li> <li>• Test / Calibrate instruments, systems or equipment.</li> </ul>						

CIRCUITS AND FLOW DIAGRAM DESIGN					ASSESSOR'S USE	
					START DATE	END DATE
<b>Unit 5</b>	Basic design	F				
	Computer design software	F				
	Simulation / Emulation	F				
After completion of this unit the student should be able to demonstrate ability of the following: <ul style="list-style-type: none"> <li>• Develop circuit diagrams / flow diagrams.</li> <li>• Demonstrate the interpretation of circuits / flow diagrams.</li> <li>• Demonstrate knowledge of simulation / emulation.</li> </ul>						

PROGRAMMABLE DEVICES					ASSESSOR'S USE	
					START DATE	END DATE
<b>Unit 6</b>	Programmable devices	F				
	After completion of this unit the student should be able to demonstrate ability of the following: Basic Programming, downloading and testing of programs for different programmable devices.					

				ASSESSOR'S USE	
Unit 7	OTHER TOPICS	START DATE	END DATE	MARK	SIGNATURE
	Any other specialization field specific topics may be added by the mentor. The mentor must give realistic credit values to the topics.				