



**VAAL UNIVERSITY
OF TECHNOLOGY**

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LEARNER GUIDE

Faculty	Engineering and Technology
Department	Electrical Engineering
Course	Process Instrumentations
Title	EIEXL2A Work-base Placed Learning 2
Compiled By	TV Maloka
Year	2021
NQF Level	5
Credits	16

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CONTACT DETAILS

DEPARTMENT	OFFICE	E-MAIL ADDRESS	TELEPHONE
Computer Systems Coordinator	S113	malokat@vut.ac.za	016 950 9433
Co-operative Education	N000	carlen@vut.ac.za	016 950 9161

GENERAL REQUIREMENTS

- It is the responsibility of the student to register for WBL before training commences.
- The student will simultaneously register for EIEXL1A, EIEXL2A and EIPRJ4A, which are the three components of the workplace-based learning.
- The registration, completion and submission of reports must be done according to the guidelines on page 4.
- An accredited assessor, appointed by industry, will do the assessment of the project. This assessor must have a qualification that is equal to or higher than the qualification being assessed.
- 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 examiner.
- The assessor must complete page 6, the assessor's declaration (page 9), as well as the assessment report (page 8 to17).
- If the mentor or assessor needs any assistance, feel free to contact the Process Instrumentations Coordinator at VUT. (see top of page)
- To fulfil the requirements of the Diploma: Electrical Engineering: Process Instrumentations, the student must successfully complete all academic requirements, as well as the three Workplace Based Learning components.
- The syllabus Appendix B is a generic WBL syllabus for the study fields of Computer Systems Engineering.
- Graduate attributes (GA1, GA2,GA3, GA4,GA5, GA6 and GA11) are GA's to be covered in this module as part of the requirements of the Engineering Counsel of South Africa (ECSA). The Process Instrumentations Engineering Syllabus Appendix B contain a detailed explanation of the GA's.

REGISTRATION AND REPORT SUBMISSION INSTRUCTIONS

Workplace Based Learning (WBL) Registration

Registration procedure:

- Registration for the following WBL modules EIEXL1A, EIEXL2A and EIPRJ4A must be done simultaneously.
- This project module EIPRJ4A carries a credit value of 30 with a minimum time requirement of 900 hours (approx. 23 weeks).

Workplace Based Learning (WBL) Reports

Preparation and submission procedure:

- The project proposal, as well as pages 5 and 6 must be emailed to the VUT Computer Systems Engineering coordinator (Mr. TV Maloka), within the first three weeks after this module of WBL commences.
- Proposal
 - Start with a firm introduction.
 - State the problem.
 - Propose solutions.
 - Include a schedule and budget.
- The final project must be assessed and signed (page 10 to 15).
- After completing this module of WBL the assessor must complete the assessor's declaration (page 9).
- The final project and project assessment report for this module must be submitted by post or in person to the Cooperative Education Office (Room N100) at VUT or email to the VUT Process Instrumentations Coordinator.

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PROCESS INSTRUMENTATIONS ENGINEERING



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**TRAINING SCHEDULE REPORT
EIEXL2A (480 HOURS)**

Procedure to complete and submit the training schedule:

- Within 14 days after WBL commenced the training schedule report (pages 5 to 7) must be emailed to the relevant VUT WBL coordinator. (Mr. TV Maloka, email address: malokat@vut.ac.za).
- Complete pages 6 and 7.
- The report must be signed by the mentor and the student (page 7).
- Choose the topics that could be offered by the company in accordance with their main business. If there are other topics, that could be offered by the company, but not mentioned in the document it should be added. Topic 10 on page 119 is a blank topic and should be used for the additional topics.

1 GENERAL INFORMATION – TRAINING SCHEDULE REPORT **WBL (EIEXL2A)**

STUDENT	NUMBER:		STUDENT'S POSTAL ADDRESS:
	INITIALS & SURNAME:		
	ID NUMBER:		
	E-MAIL:		
	TELEPHONE (WORK):		CELL PHONE:
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
ASSESSOR	INITIALS & SURNAME:		ACCREDITED ASSESSOR: Y/N
	E-MAIL:		CELL OR TELEPHONE:
	QUALIFICATIONS:		
WBL 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 TOPICS SCHEDULED FOR WBL 2 (EIEXL2A)

The following table shows the possible **applicable** topics that may be included by the company where the workplace based learning takes place. Show the total hours for each topic.

The scheduled topics are on pages 10 to 18. Extra topics that the company may wish to include should be added. The topics numbered 1 to 9 serves as a guide and may be modified by the company. Topics will however need to be approved by VUT.

TOPIC NUMBER	CONTENT TOPICS	TIME HOURS
1	Programmable devices.	
2	Industrial systems	
3	Plant Loop Training.	
4	Other	
5	Other	
6	Other	
	TOTAL Hours	480

WBL SCHEDULE ACCEPTED BY STUDENT:		
NAME:	SIGNATURE:	DATE:
WBL SCHEDULE COMPILED BY ASSESSOR: :		
NAME:	SIGNATURE:	DATE:
WBL SCHEDULE ACCEPTED BY VUT:		
NAME:	SIGNATURE:	DATE:

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TOPIC ASSESSMENT REPORT
EIEXL2A (480 Hours)

Procedure to compile and submit the assessment report:

- After completion of each topic, the topic must be assessed by the assessor and signed. (page 10 to 19)
- After completion of this module on WBL the assessor must complete the assessor's declaration (page 9).
- The final report for this module (page 8 to 19) must be submitted **by email** to the WBL coordinator (Mr. TV Maloka malokat@vut.ac.za).

2 ASSESSOR DECLARATION – ASSESMENT REPORT WBL 2 (EIEXL2A)

STUDENT	INITIALS AND SURNAME :	
	VUT - STUDENT NUMBER :	
	ID NUMBER :	
COMPANY :		
TRAINING PERIOD	WBL :	TO
		START DATE:
		COMPLETION DATE:
ASSESSOR	INITIALS AND SURNAME :	
	CELL OR TELEPHONE NUMBER :	
	E-MAIL:	
ASSESSMENT		
ASSESSOR DECLARATION		
<p>I, the above-mentioned assessor, declare that the above-mentioned student has completed this workplace based learning module (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>		
<i>Signature :</i>		<i>Date:</i>
VUT OFFICIAL	FINAL MARK:	
<i>SIGNATURE:</i>	<i>DATE:</i>	

ASSESSMENT REPORT AND TRAINING SCHEDULE WBL 2 (EIEXL2A)

SYLLABUS: PROCESS INSTRUMENTATIONS ENGINEERING

TOPIC 1	Programmable devices				
After completion of this topic the student should be able to do the following:					
<ul style="list-style-type: none"> • Programming, downloading and testing of programs for programmable devices 					
Start Date:	End Date:		Total Hours:		
Topic Mark (Mark with an X using attached rubric page 20)					
Assessor Signature:			1	2	3
Date:			4	5	
Explain how this topic is addressed in the specific workplace and how Graduate Attribute 11 (GA11) is attained. (Refer also to the GA's in the Syllabus pages 21 to 23)					
Student Signature:			Date:		

Student Signature:			Date:		
Mentor Signature:			Date:		
TOPIC 3	PLANT LOOP TRAINING				
<p>After completion of this topic the student should be able to do the following:</p> <ul style="list-style-type: none"> • Understand and work on control systems • Understanding and demonstrate occupational safety and other legislative requirements for the practise of a learner technician/student • Understand and demonstrate different ISO standards and how this tie into industry requirements to comply to these standards • Understand and apply the requirements and steps that need to be followed to do work in the workplace with the permit to work system. 					
Start Date:		End Date:		Total Hours:	
Topic Mark (Mark with an X using rubric attached page 20)					
Assessor Signature:		1	2	3	4
Date:		5			
<p>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 11 (GA11) is attained. (Refer also to the GA's in the Syllabus pages 21 to 23)</p>					

Student Signature:

Date:

Mentor Signature:

Date:

WBL - EIEXL2A

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

APPENDIX A

VAAL UNIVERSITY OF TECHNOLOGY

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT PROCESS CONTROL AND COMPUTER SYSTEMS ENGINEERING

SYLLABUS

INSTRUCTIONAL OFFERING: Workplace based Learning

INTERNAL CODE: EIEXL2A

INSTRUCTIONAL PROGRAMMES: Diploma in Electrical Engineering

ASSESSMENT: Written Report

NQF LEVEL: 6

CREDITS: 16

DOCUMENT REVISION: August 2021

1. Syllabus Content

- a) Specific learning content is determined by the Employer. The following represents typical fields of learning content: programmable control devices, industrial control systems, control loops. .
- b) As follow-up module, these fields would typically include the development, building and configuration of systems, which may include Programmable control devices, Industrial control systems, and control loops. The installation and configuration of specific employer systems should be included.
- c) Another area where students may receive world-place-based exposure is in the configuration and implementation of IIOT systems.

2. Learning Outcomes

After completion of this course the student should be able to demonstrate at least one or more of the following:

- Programming and testing of programs for programmable devices
- Interpretation of process diagrams and flow diagrams
- Ability to install and commission equipment on a system and do fault finding
- Understand components of control systems in an industrial environment.
- Understanding and demonstrate hazardous area requirements.
- Understand and demonstrate different ISO, ISA and company standards compliance.
- Understand and apply the requirements and steps that need to be followed to do work in the workplace with the permit to work system
- .

3. Graduate Attributes

This module aids to assess the following ECSA defined graduate attribute as applicable to workplace based learning:

Graduate Attribute 11: Workplace practices

Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.

Note: The purpose of work-integrated learning is to enable the learner to connect academic learning with workplace practice.

Range Statement: Tasks to demonstrate this attribute may be performed in one or more of the following curriculum types:

1. Work-directed theoretical learning: in which theoretical forms of knowledge are introduced and sequences in ways that meet both academic criteria and are applicable and relevant to the career-specific components.
2. Problem-based learning: where students work in small self-directed groups to define, carry out and reflect on a task, which is usually a real-life problem.
3. Project-based learning: that brings together intellectual enquiry, real world problems and student engagement in meaningful work.
4. Workplace learning: where students are placed in a professional practice or simulated environment within a training programme.
5. Simulated learning.

1. .

4. Graduate attributes assessment

Graduate Attribute 11: Workplace practices Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Students are required to produce a report that is verified by a mentor, illustrating the ability to develop, build and configure process control systems, in which the workplace based learning takes place.
What is satisfactory performance?	Appropriate and applicable process control systems can be demonstrated and explained.
What is the consequence of unsatisfactory performance?	Work must be repeated until the appropriate application of theoretical knowledge can be demonstrated.

5. Module Credits

16 Credits

1 credit = 30 hours

16 Credits x 30 hrs. = 480 hours (12 Weeks)

6. Module Knowledge Profile

Mathematical Sciences	Natural Sciences	Engineering Sciences	Engineering Design	Computing and IT	Complementary Studies	Work Integrated learning
						16