



**VAAAL UNIVERSITY  
OF TECHNOLOGY**

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# LEARNER GUIDE

<b>Faculty</b>	Engineering and Technology
<b>Department</b>	Electrical Engineering
<b>Course</b>	Computer Systems
<b>Title</b>	EIEXC1A Workbase Placed Learning 1
<b>Compiled By</b>	AG Joubert
<b>Year</b>	2021
<b>NQF Level</b>	5
<b>Credits</b>	14

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## CONTACT DETAILS

DEPARTMENT	OFFICE	E-MAIL ADDRESS	TELEPHONE
Computer Systems Coordinator	R005	kalala@vut.ac.za	
Co-operative Education	N000	<a href="mailto:carlen@vut.ac.za">carlen@vut.ac.za</a>	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 EIEXC1A, EIEXC2A and EIPRC4A, 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 each relevant topic. 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 the training schedule report (pages 5 to 7), the assessor's declaration (page 9), as well as the assessment report (page 10 to 18).
- If the mentor or assessor needs any assistance feel free to contact the Computer Systems Coordinator at VUT. (see top of page)
- To fulfil the requirements of the Diploma: Electrical Engineering: Computer Systems, the student must successfully complete all academic requirements, as well as the three Workplace Based Learning components.
- The syllabus Appendix A (pages 20 to 23) is a generic WBL syllabus for the study fields of Computer Systems Engineering. The assessor/mentor can schedule the topics for training.
- 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 blank topic 9 on page 18. Add as many topics as necessary by just copying the blank topic 9 on page 18.
- Graduate attribute 12 ( GA12) must be covered in this module as part of the requirements of the Engineering Counsel of South Africa (ECSA). The Computer Systems Engineering syllabus (pages 20 to 23) contain a detailed explanation of the GA's.

## REGISTRATION AND REPORT SUBMISSION INSTRUCTIONS

### Registration of Workplace Based Learning (WBL)

Registration procedure:

- Registration for the following WBL modules EIEXC1A, EIEXC2A and EIPRC4A must be done simultaneously.
- This first module EIEXC1A carries a credit value of 14 with a minimum time requirement of 420 hours (approx. 11 weeks).

### Workplace Based Learning (WBL) Reports

Preparation and submission procedure:

- The training schedule report (pages 5 to 7), must be completed and emailed to the VUT Computer Systems Engineering coordinator (Mr. K Nshimba) as soon as possible after this module of WBL commences.
- After completion of each topic, the topic must be assessed and signed by the mentor and the student. (page 9 to 18).
- After completion of this module of WBL the assessor must complete the assessor's declaration (page 9).
- The final report for this module must be emailed to the VUT Computer Systems Engineering WBL coordinator (Mr. K Nshimba, [kalala@vut.ac.za](mailto:kalala@vut.ac.za) ).

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FACULTY OF ENGINEERING AND TECHNOLOGY  
WORKPLACE BASED LEARNING  
COMPUTER SYSTEMS ENGINEERING



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**TRAINING SCHEDULE REPORT  
EIEXC1A (420 HOURS)**

Procedure to complete and submit the training schedule:

- Within 14 days after WBL commenced the training schedule report (pages 6 and 7) must be emailed to the relevant VUT WBL coordinator. (Mr K Nshimba, email address: kalala@vut.ac.za).
- Complete pages 6 and 7.
- The training schedule 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 9 on page 18 is a blank topic and should be used for the additional topics.

# 1 GENERAL INFORMATION – TRAINING SCHEDULE REPORT **WBL (EIEXC1A)**

<b>STUDENT</b>	NUMBER:		<b>STUDENT'S</b> POSTAL ADDRESS:
	INITIALS & SURNAME:		
	ID NUMBER:		
	E-MAIL:		
	TELEPHONE (WORK):		CELL PHONE:
<b>COMPANY</b>	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
<b>ASSESSOR</b>	INITIALS & SURNAME:		ACCREDITED ASSESSOR: Y / N
	E-MAIL:		CELL OR TELEPHONE:
	QUALIFICATIONS:		
<b>WBL REPORT</b>	START DATE:		END DATE :

VUT OFFICE USE :

ACCEPTED ☐

DECLINED ☐

## 2 TOPICS SCHEDULED FOR WBL 1 (EIEXC1A)

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	Orientation (Compulsory)	
2	Safety (Compulsory)	
3	Basic Handskills (Compulsory)	
4	Test Equipment (Compulsory)	
5	Hardware Maintenance (Compulsory)	
6	Software Maintenance (Compulsory)	
7	Network Maintenance	
8	Database Maintenance	
9	Other	
10	Other	
11	Other	
12	Other	
	TOTAL Hours	420

### **WBL SCHEDULE ACCEPTED BY:**

STUDENT NAME:

SIGNATURE:

DATE:

### **WBL SCHEDULE COMPILED BY:**

ASSESSOR NAME:

SIGNATURE:

DATE:

### **WBL SCHEDULE ACCEPTED BY VUT:**

WBL COORDINATOR NAME:

SIGNATURE:

DATE:

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COMPUTER SYSTEMS ENGINEERING



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**TOPIC ASSESSMENT REPORT  
EIEXC1A (420 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 18)
- 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 18) must be submitted **by email** to the WBL coordinator (Mr. K Nshimba [kalala@vut.ac.za](mailto:kalala@vut.ac.za)).



## 2 ASSESSOR DECLARATION – ASSESSMENT REPORT WBL 1 (EIEXC1A)

<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>WBL :</b>	<b>TO</b>
		<b>START DATE:</b> <b>COMPLETION DATE:</b>
<b>ASSESOR</b>	<b>INITIALS AND SURNAME :</b>	
	<b>CELL OR TELEPHONE NUMBER :</b>	
	<b>E-MAIL:</b>	
	<b>ASSESSMENT</b>	
<b>ASSESOR DECLARATION</b> <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> <p><i>SIGNATURE :</i> <i>DATE:</i></p>		
<b>VUT OFFICIAL</b>	<b>FINAL MARK:</b>	
<i>SIGNATURE:</i>		<i>DATE:</i>

**ASSESSMENT REPORT AND TRAINING SCHEDULE    WBL 1    (EIEXC1A)**  
**SYLLABUS: COMPUTER SYSTEMS ENGINEERING**

<b>TOPIC 1</b>	<b>ORIENTATION / INTRODUCTION</b>				
Company policies, procedures and professional requirements.					
After completion of this topic the student should be able to do the following: <ul style="list-style-type: none"> <li>Understand the policies, procedures and professional of the company as laid down in the orientation program.</li> </ul>					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)					
<b>Assessor Signature:</b>			1	2	3
<b>Date:</b>			4	5	
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>			<b>Date:</b>		
<b>Mentor Signature:</b>			<b>Date:</b>		

<b>TOPIC 2</b>		<b>SAFETY AND FIRST AID</b>				
Industrial or Mining safety regulations as applicable, NOSA course and Basic first aid course.						
After completion of this topic the student should be able to do the following: <ul style="list-style-type: none"> <li>• Contribute to the safety, health and environment of the industry as laid down in a safety program.</li> <li>• Demonstrate and comply with relevant OHSACT.</li> <li>• Demonstrate and comply with NOSA safety standards.</li> <li>• Demonstrate the necessary first aid skills.</li> </ul>						
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>			
<b>TOPIC MARK</b> (Mark with an X using rubric attached page 19)						
<b>Assessor Signature:</b>			1	2	3	4
<b>Date:</b>						5
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)						
<b>Student Signature:</b>			<b>Date:</b>			
<b>Mentor Signature:</b>			<b>Date:</b>			

<b>TOPIC 3</b>	<b>BASIC HAND SKILLS</b>				
Mechanical / Electrical / Electronic / Computer.					
After completion of this topic the student should be able to do the following as applicable to the discipline: <ul style="list-style-type: none"> <li>Competent use of basic tools and equipment.</li> </ul>					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using rubric attached page 19)					
<b>Assessor Signature:</b>			1	2	3
<b>Date:</b>			4	5	
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>			<b>Date:</b>		
<b>Mentor Signature:</b>			<b>Date:</b>		

<b>TOPIC 4</b>	<b>TEST EQUIPMENT</b>				
Basics and the application of test equipment.					
After completion of this topic the student should be able to do the following: <ul style="list-style-type: none"> <li>• Demonstrate the understanding of the basics of test equipment.</li> <li>• Operate computer hardware and software test equipment used in the specific field.</li> </ul>					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)					
<b>Assessor Signature:</b>		1	2	3	4
<b>Date:</b>					
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>		<b>Date:</b>			
<b>Mentor Signature:</b>		<b>Date:</b>			

<b>TOPIC 5</b>	<b>HARDWARE MAINTENANCE</b>				
Computer hardware systems which include: Servers, PC's, Laptops, Printers and Peripheral Devices.					
After completion of this topic the student should be able to display an understanding of: <ul style="list-style-type: none"> <li>• Maintenance procedure, functions and use of the above equipment.</li> <li>• The ability to assemble, configure and commission the above computer hardware infrastructure.</li> </ul>					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)					
<b>Assessor Signature:</b>	1	2	3	4	5
<b>Date:</b>					
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>			<b>Date:</b>		
<b>Mentor Signature:</b>			<b>Date:</b>		

<b>TOPIC 6</b>	<b>SOFTWARE MAINTENANCE</b>				
Operating Systems and Application Software.					
After completion of this topic the student should be able to demonstrate the ability to: <ul style="list-style-type: none"> <li>• Install, maintain and administer software on PC's.</li> </ul>					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)					
<b>Assessor Signature:</b>		1	2	3	4
<b>Date:</b>					
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>		<b>Date:</b>			
<b>Mentor Signature:</b>		<b>Date:</b>			

<b>TOPIC 7</b>	<b>NETWORK MAINTENANCE</b>				
Introductory aspects of network maintenance such as cabling and physical infrastructure.					
After completion of this topic the student should be able to: <ul style="list-style-type: none"> <li>• Demonstrate the ability to build and cable network infrastructure</li> <li>• Perform basic configuration according to industry standards and codes.</li> </ul>					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)					
<b>Assessor Signature:</b>			1	2	3
<b>Date:</b>			4	5	
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>			<b>Date:</b>		
<b>Mentor Signature:</b>			<b>Date:</b>		



<b>TOPIC 8</b>	<b>DATABASE MAINTENANCE</b>				
Database Software					
After completion of this topic the student should be able to demonstrate the ability to: Install, maintain and administer database software.					
<b>Start Date:</b>	<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)					
<b>Assessor Signature:</b>		1	2	3	4
<b>Date:</b>					5
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)					
<b>Student Signature:</b>		<b>Date:</b>			
<b>Mentor Signature:</b>		<b>Date:</b>			

## OTHER TOPICS (Make as many copies of this blank unit as necessary)

<b>TOPIC 9</b>						
After completion of this topic the student should be able to do the following:						
<b>Start Date:</b>		<b>End Date:</b>		<b>Total Hours:</b>		
<b>TOPIC MARK</b> (Mark with an X using attached rubric page 19)						
<b>Assessor Signature:</b>		1	2	3	4	5
<b>Date:</b>						
<b>Explain how this topic is addressed in the specific workplace and how Graduate Attribute 12 (GA12) is attained.</b> (Refer also to the GA's in the Syllabus pages 20 to 22)						
<b>Student Signature:</b>		<b>Date:</b>				
<b>Mentor Signature:</b>		<b>Date:</b>				

# WBL - EIEXC1A

## 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
<b>1</b> 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
<b>2</b> 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
<b>3</b> 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
<b>4</b> 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
<b>5</b> 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:** EIEXC1A

**INSTRUCTIONAL PROGRAMMES:** Diploma in Electrical Engineering

**ASSESSMENT:** Written Report

**NQF LEVEL:** 5

**CREDITS:** 14

**DOCUMENT REVISION:** August 2021

### **1. Syllabus Content**

- a) Learning content must include company policies, procedures, safety and professional requirements.
- b) Specific learning content is determined by the Employer. The following represents typical fields of learning content: Computer Hardware Systems, Operating Systems, Networks, Software, Databases and Software Engineering.
- c) As an NQF level 5 module these fields would typically include: procedures for maintenance of Servers, PC's, Laptops, Printers and other Peripheral Devices. This includes both hardware and operating systems. Installation and configuration of employer applications is also included.
- d) An additional area in which workplace-based learning is recommended is in the introductory aspects of network maintenance such as cabling and physical infrastructure.
- e) Another area where students may receive workplace based exposure is in the maintenance and administration of database and software systems.

## 2. Learning Outcomes

It is a compulsory requirement of this course that the student should be able to:

- Display knowledge and understanding of company policies, procedures, safety and professional requirements.

After completion of this course the student should be able to demonstrate the following:

- Display an understanding of maintenance procedures, functions and use of Servers, PC's, Laptops, Printers and Peripheral Devices in the work environment.
- Demonstrate the ability to assemble, configure and commission computer hardware infrastructure for a business/industrial environment.
- Demonstrate the ability to build and cable network infrastructure and perform basic configurations according to industry standards and codes.
- Demonstrate the ability to install, maintain and administer software and/or database systems for a business environment.

## 3. Graduate Attributes

This module aids to assess the following ECSA defined graduate attributes 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 workplace based learning is to enable the learner to connect academic learning with workplace practice.

**Range Statement:** Tasks to demonstrate this outcome 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.

#### 4. Graduate attributes assessment

<b>Graduate Attribute 12: Workplace practices</b> Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.	
Where is outcome assessed?	In the workplace.
How is this outcome assessed?	Students are required to produce a report that is verified by a mentor illustrating the ability to apply appropriate theoretical knowledge and understanding to the systems and environment in which the workplace based learning takes place.
What is satisfactory performance?	The report must provide adequate evidence that the student has participated and demonstrated the ability to apply theoretical knowledge to perform maintenance and administration on computer systems.
What is the consequence of unsatisfactory performance?	Work must be repeated until the appropriate application of theoretical knowledge can be demonstrated.

#### 5. Module Credits

Total Credits = 14

1 Credit = 30 hours

14 Credits x 30 hrs. = 420 Hours (10 - 11 Weeks)

#### 6. Module Knowledge Profile

Mathematical Sciences	Natural Sciences	Engineering Sciences	Engineering Design	Computing and IT	Complementary Studies	Work Integrated learning
						14