VAAL UNIVERSITY OF TECHNOLOGY
Inspiring thought. Shaping talent.

Final report - WBL

FACULTY OF ENGINEERING AND TECHNOLOGY

WORKPLACE BASED LEARNING (WBL)

MECHANICAL 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.
- After completing WBL, the mentor must compile the mentor's declaration (page 2) and award mark for WBL from the organization before the University examiner award its own mark.
- The final report must be, print out, bind and submit at **VUT Cooperative Education office** – **Block N- Room 100**

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

STUDENT	**INITIALS AND SURNAME :**	
	VUT - STUDENT NUMBER :	
	ID NUMBER :	
	COMPANY :	
TRAINING PERIOD	**WBL :**	***START DATE:*** ***COMPLETION DATE:***
ASSESSOR	**INITIALS AND SURNAME :**	
	ASSESSOR SIGN:	
	CELL:	
	TELEPHONE NUMBER :	
	E-MAIL:	
MENTOR	**INITIALS AND SURNAME :**	
	CELL:	
	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 (WBL) component** for the qualification in the above mentioned period under my supervision.
The student was found competent in the outcomes as specified in the assessment report.

The mark indicated above will not be the final mark awarded to the student, as the University examiner will award its own mark based on the final report submitted to the University for evaluation as final result for Work Integrated Learning - WBL.

VUT OFFICIAL	**FINAL MARK**

3 **ASSESSMENT REPORT WBL**

SYLLABUS: MECHANICAL ENGINEERING

TRAINING SCHEDULE

F= Fundamental *(Compulsory)*

E= Elective *(Choice)*

ORIENTATION / INDUCTION	CRITERIA	DURATION	MARK	ASSESSOR 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.				

SAFETY AND FIRST AID	Criteri	DURATIO	MAR	ASSESSOR SIGNATURE
Industrial or Mining safety regulations as applicable OHSACT	**F**			
NOSA course	**E**			
Basic first aid course	**E**			
Lockout procedures	**F**			
After completion of this unit the student should be able to do the following: - Demonstrate knowledge of the safety, health and environment applicable to the specific industry. - Demonstrate and comply with relevant OHSACT. - Demonstrate and comply with NOSA safety standards**, if elected.** - Demonstrate basic first aid**, if elected.** - Know how to apply lockout on machines.				

BASIC HAND SKILLS	Criteria	DURATION	MARK	ASSESSOR SIGNATURE
Tools nonelectrical	**F**			
Tools electrical	**F**			
After completion of this unit the student should be able to do the following as applicable to the discipline: - To be competent in using the basic hand tools like, hammers, chisels, files, hacksaw, measuring instruments, etc. - To be competent in using the basic electrical tools and equipment.				

LATH/MILL EQUIPMENT	Criteria	DURATION	MARK	ASSESSOR SIGNATURE
Observation of lathe operation	**F**			
Observation of milling operation	**E**			
Demonstrate understanding of lath settings	**F**			
Demonstrate understanding of milling settings	**E**			

After completion of this unit the student should be able to do the following:

- Demonstrate the understanding of the basics of lathe and mill operation
- Demonstrate the understanding of the speed of operation on lathe and mill when working on various materials.
- Know what a parallel cut is, a crosscut, taper cut and how a screw thread is cut.
- Know how a hole is bored with the aid of a boring bar.

BEARINGS	Criteria	DURATION	MARK	ASSESSOR SIGNATURE
Identification	**F**			
Characteristics	**F**			
Installation and removal	**F**			
Bearing lubrication	**F**			
Vibration	**E**			

After completion of this unit the student should be able to do the *following:*
Demonstrate the identification of various bearings, speed limit, loading limit and load direction. Demonstrate instillation and removal procedures,
Have knowledge of lubrication requirements,
Understand the purpose of vibration analysis
Know how to capture effective vibration readings, ***if elected***

FAULT FINDING AND REPAIR	Criteria	DURATION	MARK	ASSESSOR SIGNATURE
Do fault-finding on numerous machines on the plant.	F			
Do repairs on numerous machines on the plant.	F			
Identify machines on which the breakdown maintenance strategy are performed	F			
Identify machines on which the planned maintenance is strategy performed	F			
After completion of this unit the student should be able to do the following: □ Be familiar with fault-finding techniques on numerous machines on the plant. □ Be familiar with repairs on numerous machines on the plant. □ Understand why certain machines follow the breakdown maintenance strategy □ Understand why certain machines follow the planned maintenance strategy				

PLANNING DEPARTMENT	Criteria	DURATION	MARK	ASSESSOR SIGNATURE
Job cards	F			
Maintenance computer software systems	E			
Daily, weekly, monthly maintenance planning schedules.	F			
Execution of job	F			
After completion of this unit the student should be able to do the following: • Understand the job card function. • Demonstrate the interpretation of maintenance plans. • Demonstrate knowledge of maintenance planning computer software, **if elected** • Plan a job in the plant, oversee the execution of the job, and then write a report.				

TECHNICAL DRAWINGS AND SCADE SYSTEMS	Criteria	DURATION	MARK	ASSESSOR'S USE SIGNATURE
Exposed to technical drawing in industry application	E			
Exposure to scale system in plant application	E			
After completion of this unit the student should have exposure to aspects of technical drawings like: • Orthographic projection. • Development and interpenetration. • Assembly drawings • Tolerance and machining symbols • Sectional views of assemblies of machine parts and castings After completion of this unit the student should have exposure to Scade systems				

					ASSESSOR'S USE
WELDING AND GAS WORK	Criteria	DURATION	MARK	SIGNATURE	
Welding	**F**				
Gas work	**F**				
Gas cutting	**F**				
After completion of this unit the student should be able to do the following: - Do basic flat and vertical arc welding - Understand the ratio between current required to weld and material thickness - Understand the importance of electrode selection. - Have exposure to and be familiar to the processes of gas welding, metal fillers, brazing - Have exposure to and be familiar to the processes of gas cutting.					

				ASSESSOR
INSTALLATION AND COMMISSIONING	Criteria	DURATION	MARK	SIGNATURE
Installing and commissioning after major repairs of plant equipment	**E**			
Instillation and commissioning of digital, pneumatics, hydraulic systems	**E**			
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	
ALIGNMENT AND DRIVES	Criteria	DURATION		MARK	SIGNATURE
Clock gauge alignment method	**F**				
Laser alignment	**E**				
Belt drives and alignment	**F**				
Coupling selection	**F**				
Shaft key	**F**				
After completion of this unit the student should be able to do the following - Align the following mechanical systems: 1. Motor to pump 2. Motor to gearbox and any other machine. 3. Belt drive alignment and tensioning. - Select coupling for various applications - Select shaft keys for various applications					

					ASSESSOR'S USE	
CONDITION MONITORING	Criteria	DURATION			MARK	SIGNATURE
Vibration analysis	**E**					
Oil analyses	**E**					
Thermography	**E**					
After completion of this unit the student should be able to do the following: - Identify the vibration monitoring methods used in that company. - Study vibration charts recorded by the company and know how to identify a failure from the chart. - Identify the methods of oil analyses used at the company. - Study oil analyses charts recorded. - Identify symptoms of replenished oils. Acquire knowledge of thermography applications in industry.						

					ASSESSOR'S USE	
VALVES AND SAFETY VALVES	Criteria	DURATION			MARK	SIGNATURE
Identify Valve types	**E**					
Test of valves	**E**					
Testing safety release values	**E**					
After completion of this unit the student should be able to do the following: Have an insight into the different valves used in the plant. How to test valves and the method of replacing valves.						

					ASSESSOR'S USE	
PNEUMATICS AND HYDRAULICS	Criteria	DURATION			MARK	SIGNATURE
Hydraulics	**E**					
Pneumatics	**E**					
After completion of this unit the student should be able to do the following: Trained to distinguish between and know the applications of the following hydraulic or pneumatic circuit components: Pumps, Motors, Actuators, Accumulators, Filters, Reservoir, Seals, Different types of fluid.						

PROPULSION OF MECHANICAL SYSTEMS	Criteria	DURATION		ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Understand the applications of mechanical systems	**F**				
Applied maintenance to mechanical systems	**F**				
After completion of this unit the student should be able to do the following Understand and maintain the following methods of propulsion: - V-belt drives - Chain drives - Fluid couplings - Braking systems.					

MATERIAL SELECTION	Criteria	DURATION		ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Selecting of materials	**E**				
Failure analyses of the materials in applications.	**E**				
After completion of this unit the student should be able to do the following: • Understand the physical, mechanical & thermal properties • How to select materials • Analysis of material requirements • Economics of materials • Cost vs. Performance • Failure analysis.					

RIGGING	Criteria	DURATION		ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Welding	**E**				
Gas work	**E**				
Gas cutting	**E**				
After completion of this unit the student should be able to do the following:					

PROJECT	Mechanical Eng.	START DATE		ASSESSOR'S USE MARK	ASSESSOR'S USE SIGNATURE
Industrial project	**F**				
Documentation	**F**				
After completion of this unit the student should be able to do the following: - Successful completion of a small project which includes improvement design on a machine. - Submit project report for assessment.					

				ASSESSOR'S USE	
MECHANICAL EQUIPMENT	Mechanical Eng.			MARK	SIGNATURE
Motors	**F**				
Gearboxes	**F**				
Pumps	**F**				
Boilers	**F**				
Crushers	**F**				
Conveyor belts	**F**				
After completion of this unit the student should have knowledge of the following: □ The operation on different types of equipment. □ The start-up and shutdown procedures of the equipment.					

			ASSESSOR'S USE	
OTHER TOPICS	DURATION		MARK	SIGNATURE
Any other topics/activities not mentioned above may be added by the mentor. The mentor must give realistic credit values to the topics.				

WIL MARKING RUBRIC - GRADUATE ATTRIBUTE 12

EMWIL1A (WORKPLACE PRACTICES)

Note: The guideline below can be used by the assessor to do student evaluation.

INDICATORS	LEVEL OF ACHIEVEMENT				MARKS POSSIBLE	MARKS OBTAINED
	Level 4	Level 3	Level 2	Level 1		
	Outstanding	Competent	Developing	Inadequate		
Basic Engineering Knowledge	15-20	10-14	5-9	0-4	20	
Familiarity with Mechanical Engineering knowledge or Learning Area	Has strong mastery of knowledge and learning areas of assigned task, and can source for more information to address the task.	Understand knowledge and learning areas on assigned tasks.	Demonstrates some understanding of knowledge areas on assigned tasks.	Demonstrate minimal understanding of knowledge areas in most of the assigned tasks.		
Mechanical Engineering Techniques	15-20	10-14	5-9	0-4	20	
Ability to apply Mechanical Engineering Techniques	Can identify useful techniques and has strong understanding of how techniques are applied at the workplace.	Apply identified techniques with ease.	Moderate understanding on how to apply identified Engineering techniques (ME) at workplace	Find it difficult to apply identified techniques at workplace		
Mechanical Engineering Tools	15-20	10-14	5-9	0-4	20	
Ability to handle and use Industrial Engineering tools.	Ability to effectively handle and use Engineering tools. Effectively.	Adequately able to handle and use Engineering tools Correctly.	Can satisfactorily manage to use some Engineering tools.	Have difficulty in using most Engineering tools		
WIL Tasks / Activities	8-10	5-7	3-4	0-2	10	
Statement on own tasks and those of team members.	Have excellent knowledge and strong understanding of individual and team's tasks.	Can positively follow the task actions and those of team members to execute the given task.	Understanding some set of activities and its own team.	Student hardly understand the set of activities given or a task.		
WIL Report - Appearance and Content	8-10	5-7	3-4	0-2	10	
Cover page; Table of Content; Theoretical modules covered in the learning plan; Reader friendliness of document; Depth of discussion of elements within the learning plan; Formatting and layout.	Can apply with ease report writing skills on documentation and the report is user friendly to the reader. The learning plan is adequately discussed and is skillfully enhanced with diagrams, graphs, photos and the use of Color and justify.	Understand report writing principles and report is user friendly to the reader. The learning plan is discussed and enhanced with diagrams, graphs, photos, and the use of color and justify.	Can follow some of the report writing logic and layout and document is somewhat easy to the read. Some use of diagrams, graphs, photos, and the use of color & justify enhancing discussions of the learning plan.	Struggle to adhere to report layout and lack in-depth discussion of the learning plan.		
WIL Report - Report Writing (Professionalism)	8-10	5-7	3-4	0-2	10	
Adherence to report writing guidelines. Spelling and grammar is up to standard.	Report is very neat, easy to read and flow chronologically. Spelling and Grammar is excellent. Justification mandatory	Report is easy to read and the spelling and grammar is adequate.	Report does not flow fluently and contain some errors. Some obvious spelling and grammar mistakes.	Report is not reader friendly and has many spelling and grammar mistakes		
WIL Report - Enhancement	5	3-4	2	0-1	5	
Charts, diagrams, figures, graphs and photos used to enhance the report and assist with the discussions and understanding.	Student knows how to clearly present and interpret charts, figures and graphs into simple language with correct figure numbering	Student is able to explain diagram, charts, graphs and figures in accordance to the learning area.	Moderately understand how to explain charts, diagrams, figures and graphs related to the learning area.	Struggle to interpret charts, figures, diagrams and graphs related to the learning area.		
Finances	5	3-4	2	0-1	5	
Projections of production activities, costs, income, overheads, calculations, spreadsheets, formulas etc. Project cost and savings calculations.	Strongly know how to project costs involved in a project and strongly knows how to read spreadsheets, explain formulae, explain technical financial concepts into simple terms	Student can project the project costs, understand the financial concepts and explain spreadsheets.	Student has some understanding of financial language and can narrate some concepts.	Find it difficult to explain most of finances and how they came about it.		
FINAL MARK %:					100	
GRADUATE ATTRIBUTE LEVEL:	**Level 4 (75% to 100%)**	**Level 3 (50% to 74%)**	**Level 2 (25% to 49%)**	**Level 1 (0% to 24%)**		

WBL Final Report compiled by Student name:	
Students signature:	**Date:**
WBL Final Report Evaluate by Assessor Name:	
Assessor's Signature:	**Date:**
WBL Final Report Evaluate by Mentor Name:	
Mentor's Signature:	**Date:**

UNIVERSITY EVALUATION:

WBL Final Report Evaluate by University Examiner:	
University Examiner's Signature	**Date:**
WBL Final Report Evaluate by the Moderator:	
University Moderator's Signature	**Date:**

Revised 2025