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LEARNER GUIDE

Faculty	Engineering and Technology
Department	Electrical Engineering
Course	Process Instrumentations
Title	EIPRJ4A Workbase Placed Learning 3
Compiled By	TV Maloka
Year	2021
NQF Level	6
Credits	30

CONTENTS

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 Process Instrumentations 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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FACULTY OF ENGINEERING AND TECHNOLOGY

WORKPLACE BASED LEARNING

PROCESS INSTRUMENTATIONS ENGINEERING

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PROJECT PROPOSAL
EIPRJ4A (900 HOURS)

Procedure to complete and submit project proposal:

- Within 4 weeks after this module of WBL commenced page 6, as well as the project proposal must be emailed to the relevant VUT WBL coordinator. (Mr. TV Maloka, email address; malokat@vut.ac.za).
- Complete pages 6 signed by the mentor and the student.

1 GENERAL INFORMATION – TRAINING SCHEDULE REPORT WBL (EIPRJ4A)

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:
WBL	START DATE:		END DATE :

STUDENT SIGNATURE:

ASSESSOR SIGNATURE:

VUT OFFICE USE : *ACCEPTED* □ *DECLINED* □

Project Proposal for EIPRJ41A

- The student must submit a project proposal within the first 4 weeks after this module commences.
- The proposal must be signed by both the assessor and the student.
- The students may do a project on their own or they might from part of a project team, which is busy with an ongoing project. The aim is to give to student exposure to industrial projects.
- The specific area of the project is determined by the Employer. The following represents typical fields of project content: Programmable devices, Industrial systems and Plant Loop Training.
- As an the project could be done in an engineering environment which typically include PLCs, SADAs, industrial and other process control devices and systems.
- Other areas in which the project in workplace-based learning is recommended is in the more advanced aspects of process control systems. This could include the design, configuration and implementation of process systems.

While compiling a proposal the following outcomes must be kept in mind:

- Apply engineering principles to complete a *well-defined* engineering project.
- Apply knowledge of engineering sciences to applied engineering procedures, processes, systems and methodologies to complete a *well-defined* engineering project.
- Perform procedural design of components, systems, works, products or processes to meet requirements, normally within applicable standards, codes of practice and legislation.
- Conduct investigations of well-defined problems through locating and searching relevant codes and catalogues, conducting standard tests, experiments and measurements.
- Use appropriate techniques, resources, and modern engineering tools to complete a well-defined engineering project, with an awareness of the limitations, restrictions, premises, assumptions and constraints.
- Communicate effectively, both orally and in writing within an engineering context.
- Engage in independent and life-long learning through well-developed learning skills.

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FACULTY OF ENGINEERING AND TECHNOLOGY

WORKPLACE BASED LEARNING (WBL)

PROCESS INSTRUMENTATIONS ENGINEERING

PROJECT ASSESSMENT REPORT
EIPRJ4A (900 Hours)

Procedure to compile and submit the assessment report:

- The project structure Appendix C must be used to compile the written report on the project.
- After completion of the project, the project as well as the project assessment report must be submitted.
- After completion of this module on WBL the assessor must complete the assessor's declaration (page 9).
- The project and project assessment report (page 8 to 17) must be submitted **by post** or in person to the Cooperative Education department (Room N100) at the VUT or emailed to the relevant VUT WBL Process Instrumentations Coordinator.

2 ASSESSOR DECLARATION – ASSESMENT REPORT WBL PROJECT (EIPRC4A)

STUDENT	**INITIALS AND SURNAME :**	
	VUT - STUDENT NUMBER :	
	ID NUMBER :	
	COMPANY :	
TRAINING PERIOD	**WBL :**	**TO** ***START DATE:*** ***COMPLETION DATE:***
ASSESOR	**INITIALS AND SURNAME :**	
	CELL OR TELEPHONE NUMBER :	
	E-MAIL:	
ASSESSMENT		

ASSESSOR DECLARATION

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.
The student was found competent in the outcomes as specified in the assessment report.

SIGNATURE: *DATE:*

VUT OFFICIAL	**FINAL MARK:**	
SIGNATURE:		*DATE:*

ASSESMENT RUBRIC FOR WBL PROJECT (EIPRJ4A)

GRADUATE ATTRIBUTE 1	PROBLEM SOLVING		
Apply engineering principles to systematically diagnose and solve *well-defined* engineering problems. (Refer to the Graduate attributes in the Syllabus Appendix B)			
Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.) ***Assessor Signature***: ***Student Signature***: ***Date***: ***Date:***			
1.1 The problem is analysed and defined and criteria are identified for an acceptable solution.	1	2	3
1.2 Relevant information and engineering knowledge and skills are identified and used for solving the problem.	1	2	3
1.3 Various approaches are considered and formulated that would lead to workable solutions.	1	2	3
1.4 Solutions are modelled and analysed.	1	2	3
1.5 Solutions are evaluated and the best solution is selected.	1	2	3
1.6 The solution is formulated and presented in an appropriate form.	1	2	3

GRADUATE ATTRIBUTE 2	**APPLICATION OF SCIENTIFIC AND ENGINEERING KNOWLEDGE**		
Apply knowledge of mathematics, natural science and engineering sciences to applied engineering procedures, processes, systems and methodologies to solve *well-defined* engineering problems. (Refer to the Graduate attributes in the Syllabus Appendix B)			
Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.) ***Assessor Signature***: ***Student Signature***: ***Date***: ***Date:***			
2.1 An appropriate mix of knowledge of mathematics, statistics, natural science and engineering science knowledge at a fundamental level is brought to bear on the solution of *well-defined* engineering problems.	1	2	3
2.2 Applicable principles and laws are used.	1	2	3
2.3 Engineering materials, components, systems or processes are analysed.	1	2	3
2.4 Concepts and ideas are presented in a logical and methodical manner.	1	2	3
2.5 Reasoning about engineering materials, components, systems or processes is performed.	1	2	3
2.6 Procedures for dealing with uncertain/ undefined/ill-defined variables are outlined and justified.	1	2	3
2.7 Work is performed within the boundaries of the practice area	1	2	3

GRADUATE ATTRIBUTE 3	**ENGINEERING DESIGN**		
Perform procedural design of components, systems, works, products or processes to meet requirements, normally within applicable standards, codes of practice and legislation. (Refer to the Graduate attributes in the Syllabus Appendix B)			
Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.) ***Assessor Signature***: ***Student Signature***: ***Date***: ***Date:***			
3.1 The design problem is formulated to satisfy user needs, applicable standards, codes of practice and legislation.	1	2	3
3.2 The design process is planned and managed to focus on important issues and recognises and deals with constraints.	1	2	3
3.3 Knowledge, information and resources are acquired and evaluated in order to apply appropriate principles and design tools to provide a workable solution.	1	2	3
3.4 Design tasks are performed that include analysis and optimisation of the product, or system or process, subject to relevant premises, assumptions and constraints.	1	2	3
3.5 Alternatives are evaluated for implementation and a preferred solution is selected based on techno-economic analysis and judgement.	1	2	3
3.6 The design logic and relevant information is communicated in a technical report.	1	2	3
3.7 Procedures are applied to evaluate the selected design and assessed in terms of the impact and benefits.	1	2	3

GRADUATE ATTRIBUTE 4	**INVESTIGATIONS, EXPERIMENTS AND DATA ANALYSIS**

Conduct investigations of *well-defined* problems through locating and searching relevant codes and catalogues, conducting standard tests, experiments and measurements.
(Refer to the Graduate attributes in the Syllabus Appendix B)

Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.)

Assessor Signature: ***Student Signature***:

Date: ***Date:***

4.1 The scope of the investigation is defined.	1	2	3
4.2 Investigations are planned and conducted within an appropriate discipline.	1	2	3
4.3 Available literature is searched and material is evaluated for suitability to the investigation.	1	2	3
4.4 Relevant equipment or software is selected and appropriately used for the investigation.	1	2	3
4.5 Data obtained is analysed and interpreted.	1	2	3
4.6 Conclusions are drawn from an analysis of all available evidence.	1	2	3
4.7 The purpose, process and outcomes of the investigation are recorded in a technical report.	1	2	3

GRADUATE ATTRIBUTE 5	**ENGINEERING METHODS, SKILLS, TOOLS, INCLUDING INFORMATION TECHNOLOGY**

Use appropriate techniques, resources, and modern engineering tools including information technology for the solution of *well-defined* engineering problems, with an awareness of the limitations, restrictions, premises, assumptions and constraints.
(Refer to the Graduate attributes in the Syllabus Appendix B)

Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.)

Assessor Signature: ***Student Signature***:

Date: ***Date:***

5.1 The method, skill or tool is assessed for applicability and limitations against the required result.	1	2	3
5.2 The method, skill or tool is applied correctly.	1	2	3
5.3 Results produced by the method, skill or tool are tested and assessed	1	2	3
5.4 Relevant computer applications are selected and used.	1	2	3

GRADUATE ATTRIBUTE 6	**PROFESSIONAL AND TECHNICAL COMMUNICATION**		
Communicate effectively, both orally and in writing within an engineering context. (Refer to the Graduate attributes in the Syllabus Appendix B)			
Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.) ***Assessor Signature***: ***Student Signature***: ***Date***: ***Date:***			
6.1 The structure, style and language of written and oral communication is appropriate for the purpose of the communication and the target audience.	1	2	3
6.2 Graphics used are appropriate and effective in enhancing the meaning of the text.	1	2	3
6.3 Visual materials used enhance oral communications.	1	2	3
6.4 Information is provided in a format that can be used by others involved in the engineering activity.	1	2	3
6.5 Oral communication is delivered with the intended meaning being apparent.	1	2	3

GRADUATE ATTRIBUTE 9	**INDEPENDENT LEARNING ABILITY**		
Engage in independent and life-long learning through well-developed learning skills. (Refer to the Graduate attributes in the Syllabus Appendix B)			
Mark (Mark with an X where 1 = Underachieve, 2 = Achieve, 3 = Overachieve.) ***Assessor Signature***: ***Student Signature***: ***Date***: ***Date:***			
9.1 Learning tasks are identified, planned and managed.	1	2	3
9.2 The requirement for independent learning is identified/ recognised and demonstrated.	1	2	3
9.3 Relevant information is sourced, organised and evaluated	1	2	3
9.4 Knowledge acquired outside of formal instruction is comprehended and applied.	1	2	3
9.5 Awareness is displayed of the need to maintain continued competence through keeping abreast of up-to-date tools and techniques available in the workplace.	1	2	3

PROJECT TOPIC: …….

Graduate Attributes	Assessor	Mark	VUT Examiner
GA 1		**18**	
GA 2		**21**	
GA 3		**21**	
GA 4		**21**	
GA 5		**12**	
GA 6		**15**	
GA 9		**15**	
Final Mark		**123**	
Final %		**100**	

Topics	Assessor	Mark	VUT Examiner
Oral presentation		15	
Assessment of documentation		25	
Independent working ability of student		10	
Technical standard of project		25	
Technical success of project		25	
Total		**100**	

Student Signature: ***Date:***

Assessor Signature: ***Date:***

University Examiner Signature: ***Date:***

APPENDIX A

WBL - EIPRJ4A

Evaluation guideline

This guideline can be used by the assessor to do student project 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 B

VAAL UNIVERSITY OF TECHNOLOGY

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT PROCESS CONTROL AND COMPUTER SYSTEMS ENGINEERING

SYLLABUS

INSTRUCTIONAL OFFERING:	Workplace based Learning
INTERNAL CODE:	EIPRJ4A
INSTRUCTIONAL PROGRAMMES:	Diploma in Electrical Engineering
ASSESSMENT:	Written Project Report
NQF LEVEL:	6
CREDITS:	30
DOCUMENT REVISION:	August 2021

1. Syllabus Content

a) **Project:** The specific area of the project is determined by the Employer. The following represents typical fields of project content: Computer Hardware Systems, Operating Systems, Networks, Software, Databases and Software Engineering.

b) As an NQF level 6 module the project could be done in an engineering environment, which typically includes servers, computers, industrial and other computing devices and systems. This typically would include hardware, operating systems and employer software systems.

c) Other areas in which the project in workplace based learning is recommended is in the more advanced aspects of data communication systems such as LAN and WAN network systems. This could include the design, configuration and implementation of network infrastructure.

d) Another area where students may do a workplace-based project is in the environment of software, database and/or IOT systems.

2. Learning Outcomes

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

- The application of engineering principles to complete a *well-defined* engineering project.
- The application of computer science and mathematical knowledge to solve a well-defined computer engineering problem.
- Conduct investigations of well-defined problems through locating and searching relevant information, conducting standard tests, experiments and measurements.
- Communicate effectively, both orally and in writing within an engineering context.
- Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.
- Participation in a real world problem that brings together intellectual enquiry and student engagement in meaningful work.

3. Graduate Attributes

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

Graduate Attribute 1: Problem solving

Apply engineering principles to systematically diagnose and solve well-defined engineering problems.

Level Descriptor: Well-defined engineering problems:

a. Can be solved mainly by practical engineering knowledge, underpinned by related theory;
and have one or more of the characteristics:
b. are largely defined but may require clarification;
c. are discrete, focused tasks within engineering systems;
d. are routine, frequently encountered, may be unfamiliar but in familiar context;
and have one or more of the characteristics:
e. can be solved in standardized or prescribed ways;
f. are encompassed by standards, codes and documented procedures; requires authorization to work outside limits;
g. information is concrete and largely complete, but requires checking and possible supplementation;
h. involve several issues but few of these imposing conflicting constraints and a limited range of interested and affected parties.

Graduate Attribute 2: Application of scientific and engineering knowledge

Apply knowledge of mathematics, natural science and engineering sciences to applied engineering procedures, processes, systems and methodologies to solve well-defined engineering problems.

Range Statement: The level of knowledge of mathematics, natural sciences and engineering sciences is characterized by:

a. A coherent range of fundamental principles in mathematics and natural science underlying a discipline or recognised practice area.
b. A coherent range of fundamental principles in engineering science and technology underlying an engineering discipline or recognised practice area.
c. A codified practical knowledge in recognised practice area.
d. The use of mathematics, natural sciences and engineering sciences, supported by established mathematical formulas, codified engineering analysis, methods and procedures to solve *well-defined* engineering problems.

Graduate Attribute 3: Engineering Design

Perform procedural design of components, systems, works, products or processes to meet requirements, normally within applicable standards, codes of practice and legislation.

Range Statement: Design problems used in assessment must conform to the definition of well- defined engineering problems:

a. A design project should be used to provide evidence of compliance with this outcome;
b. The problem would be typical of that which the graduate would participate in a typical employment situation shortly after graduation;
c. The selection of components, systems, engineering works, products or processes to be designed is dependent on the sub-discipline;
d. A design project should include one or more of the following impacts: social, economic, legal, health, safety, and environmental.

Graduate Attribute 4: Investigations, experiments and data analysis

Conduct investigations of well-defined problems through locating and searching relevant codes and catalogues, conducting standard tests, experiments and measurements.

Range Statement: The balance of investigation should be appropriate to the discipline. An investigation should be typical of those in which the graduate would participate in an employment situation shortly after graduation.

Note: An investigation differs from a design in that the objective is to produce knowledge and understanding of a phenomenon.

Graduate Attribute 5: Engineering methods, skills and tools, including Information Technology

Use appropriate techniques, resources, and modern engineering tools including information technology for the solution of well-defined engineering problems, with an awareness of the limitations, restrictions, premises, assumptions and constraints.

Range Statement: A range of methods, skills and tools appropriate to the discipline of the program including:

a. Sub-discipline-specific tools processes or procedures;
b. Computer packages for computation, simulation, and information handling;
c. Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork;
d. Basic techniques from economics, management, and health, safety and environmental protection.

Graduate Attribute 6: Professional and technical communication

Communicate effectively, both orally and in writing within an engineering context.

Range Statement: Material to be communicated is in a simulated professional context:

a. Audiences are engineering peers, academic personnel and related engineering persons using appropriate formats;
b. Written reports range from short (minimum 300 words) to long (a minimum of 2 000 words excluding tables, diagrams and appendices), covering material at the exit level;
c. Methods of providing information include the conventional methods of the discipline, for
d. Example engineering drawings, physical models, bills of quantities as well as subject- specific methods.

Graduate Attribute 9: Independent Learning Ability

Engage in independent and life-long learning through well-developed learning skills.

Range Statement: The learning context is well-structured with some unfamiliar elements.

4. Graduate attributes assessment

Graduate Attribute 1: Problem Solving Apply engineering principles to systematically diagnose and solve *well-defined* engineering problems.	
Where is outcome assessed?	In a workplace project.
How is this outcome assessed?	Within the context of a workplace project.
What is satisfactory performance?	The project can be described in a coherent problem statement. A solution to the problem can be presented.
What is the consequence of unsatisfactory performance?	Students must work on the project definition until a suitable solution can be proposed.

Graduate Attribute 2: Application of scientific and engineering knowledge Apply knowledge of mathematics, natural science and engineering sciences to applied engineering procedures, processes, systems and methodologies to solve well-defined engineering problems.	
Where is outcome assessed?	In a workplace project.
How is this outcome assessed?	Through the project documentation.
What is satisfactory performance?	The project solution is supported by the relevant scientific and engineering knowledge within the documentation.
What is the consequence of unsatisfactory performance?	The documentation must be updated until all relevant engineering knowledge can be reported.

Graduate Attribute 3: Engineering Design Perform procedural design of components, systems, works, products or processes to meet requirements, normally within applicable standards, codes of practice and legislation.	
Where is outcome assessed?	In a workplace project.
How is this outcome assessed?	A coherent design incorporating any relevant social, economic, legal health safety or environmental impacts is presented.
What is satisfactory performance?	The problem design must be demonstrated to be relevant within the requirements of the particular project.
What is the consequence of unsatisfactory performance?	Students must work on the project design until a suitable solution can be proposed.

Graduate Attribute 4: Investigations, experiments and data analysis Conduct investigations of well-defined problems through locating and searching relevant codes and catalogues, conducting standard tests, experiments and measurements.	
Where is outcome assessed?	In a workplace project.
How is this outcome assessed?	A coherent design incorporating any relevant data is presented.
What is satisfactory performance?	The data, codes, test results or measurements must be demonstrated to be relevant within the requirements of the particular project.
What is the consequence of unsatisfactory performance?	Students must work on the project until all relevant data can be presented.

Graduate Attribute 6: Professional and technical communication Communicate effectively, both orally and in writing within an engineering context.	
Where is outcome assessed?	In a workplace project.
How is this outcome assessed?	Students are required to present a compressively documented and referenced project report and to do an oral presentation of the project.
What is satisfactory performance?	The documentation and presentation is professionally presented.
What is the consequence of unsatisfactory performance?	The documentation must be corrected until it is of a satisfactory standard.

Graduate Attribute 9: Independent Learning Ability Engage in independent and life-long learning through well-developed learning skills.	
Where is outcome assessed?	In a workplace project.
How is this outcome assessed?	Students are required to demonstrate the ability to learn and implement new knowledge relevant to the project.
What is satisfactory performance?	Newly learned material is appropriately incorporated into the project.
What is the consequence of unsatisfactory performance?	Students must repeat the acquisition of relevant knowledge until a suitable solution to the problem can be demonstrated.

5. Module Credits

30 Credits

1 Credit = 30 Hours

30 x 30 = 900 hours (23 Weeks)

6. Module Knowledge Profile

Mathematical Sciences	Natural Sciences	Engineering Sciences	Engineering Design	Computing and IT	Complementary Studies	Work Integrated learning
		15	10		5	

APPENDIX C

REPORT FORMAT

1. Title and Authors
2. Abstract
3. Table of contents
4. Introduction
5. Body of the report
6. Summary/conclusions
7. References
8. Appendices (if used)

Title page (First page)

A title page is presented on a separate page and should include:

- title of the report
- date
- student's name and number
- tutor's name
- course name and number
- department and university
- date of submission.

Abstract (Second page)

- The abstract is usually 100-200 words long.
- It provides a brief overview of the report by stating the purpose, defining the topic, summarising the main sections of the report, and stating the conclusion or outcomes.
- Most people don't write an Abstract until they finish writing the report.
- It is NOT an introduction to the topic.

Remember that an abstract needs to be concise. A busy manager who might not have time to read the full report should be able to get the gist of the whole report by reading the abstract.

To be included in an abstract:

- topic of the report
- outline of the approach to the task if applicable
- most important findings of research or key aspects of design
- main outcomes or conclusions.

Table of Contents (Third page)

A table of Contents lists the sections of the report, providing readers with an overview of how the report is organised. Your choice of headings and subheadings communicates your interpretation of the topics to the reader.
Should include:

- section headings
- the number of the first page of each section.

The Contents page sets out the sections and subsections of the report and their corresponding page numbers. It should clearly show the structural relationship between these sections and subsections

Introduction (Fourth page onwards)

An Introduction section provides the background information needed for the rest of your report to be understood. It is usually around ten percent of the total report length. The Introduction includes:

- the background to the topic of your report to set your work in its broad context
- a clear statement of the purpose of the report, usually to present the results of your research, investigation or design
- a clear statement of the aims of the project
- technical background necessary to understand the report; e.g. theory or assumptions
- a brief outline of the structure of the report.

Body of the report

This is the main part of your report, where you present your work. There are some points about the body of a report which are worth consideration:

- It should consist of information which is supported by examples and evidence obtained from your research.
- The information should be presented under appropriate headings and subheadings and should be ordered in a logical manner to facilitate the reader's understanding.

In principle, the body of the report:

- presents the information from your research, both real world and theoretical, or your design
- organises information logically under appropriate headings
- conveys information in the most effective way for communication:
    - Uses figures and tables.
    - Can use bulleted or numbered lists, but the bulk should be paragraphs made up of full sentences.
    - Can use formatting to break up large slabs of text.

Conclusion

The Conclusion section provides an effective ending to your report; thus it needs to be written in a concise manner. The content should relate directly to the aims of the project as stated in the Introduction, and sum up the essential features of your work.

In brief, the Conclusion section needs to:

- summarise the main ideas that have been established in the body of the report
- recap key findings
- finish the narrative of the report
- state to what extent you have achieved your aims
- give a brief summary of the key findings or information in your report
- highlight the major outcomes of your investigation and their significance.

References

These are very important. Your report should be sufficient to indicate to the reader what you have done, what you found out AND provide enough information for them to repeat the work if they so wished. There are generally three types of reference according to the source, journal
article, book, and web site.

While writing and planning the report pay attention to the following points:

- Make sure you mention the background to, and aims of, the investigation
- Include the basic concepts and theory relating to the investigation.
- Describe the procedures used. Identify major sources of error and explain how they were dealt with.
- Only data directly relevant to the calculation of final results should be presented, omit raw data. Graphs are a particularly effective way of presenting results – only use table where it would make more sense that providing a graph.
- Final results should be presented clearly and concisely; include an analysis of errors, but omit details of arithmetical manipulations.
- If computer code was used or written, give details of the checks and validations you performed on the code.
- The interpretation of the results must be discussed, and improvements and possible extensions of the work suggested.
- Give references to any books, articles or other sources of information (e.g. web sites) that have proved useful in preparing the report, or carrying out the work.