FACULTY OF ENGINEERING AND TECHNOLOGY

ELECTRICAL ENGINEERING: PROCESS CONTROL

WBL

WORKPLACE BASED LEARNING PROJECT GUIDE
CODE: EIPRJ4A

APPROVED: ADVISORY COMMITTEE MEETING

CONTENTS

CONTACT DETAILS

DEPARTMENT	OFFICE	E-MAIL ADDRESS	TELEPHONE
Computer Systems Coordinator	S112	koosm@vut.ac.za	016 950 9434
Co-operative Education	N100	pricilla@vut.ac.za	016 950 9707

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 10 to15).
- If the mentor or assessor needs any assistance feel free to contact the Process Control Coordinator at VUT. (see top of page)
- To fulfil the requirements of the Diploma: Electrical Engineering: Process Control, 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 Control Engineering. The assessor/mentor can the specific area of the project.
- Graduate attributes (GA1, GA2, GA4, GA5,GA6, GA7, GA8, GA10 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 Control Engineering Syllabus Appendix B 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 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 Process Control & Computer Systems Engineering coordinator (Mr. PJ Mitton), 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.

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WORKPLACE BASED LEARNING

PROCESS CONTROL ENGINEERING

WBL

PROJECT PROPOSAL
EIPRJ4A (900 HOURS)

Procedure to complete and submit project proposal:

- Within 3 weeks after this module of WBL commenced the pages 5 and 6, as well as the project proposal must be emailed to the relevant VUT WBL coordinator. (Mr PJ Mitton, email address; koosm@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* □

2 PROJECT PROPOSAL FOR EIPRJ4A

- The student must submit a project proposal within the first 3 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: Process Control Engineering 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.
- 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.
- Demonstrate knowledge and understanding of the impact of this project on the society, economy, industrial and physical environment.
- Demonstrate knowledge and understanding of engineering management principles and apply these to the project, as a member and/or leader in a technical team and to manage the project.
- Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.
- Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.

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PROCESS CONTROL ENGINEERING

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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 15) must be submitted **by post** or in person to the Cooperative Education department (Room N100) at the VUT.

2 ASSESSOR DECLARATION – ASSESMENT REPORT WBL PROJECT (EIPRJ4A)

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 REPORT WBL PROJECT (EIPRJ4A)

GRADUATE ATTRIBUTE 1	PROBLEM SOLVING

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

Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature***:	1	2	3	4	5

Explain how this topic is addressed in the specific project.
(Refer to the Graduate attributes in the Syllabus Appendix B)

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.					
Mark (Mark with an X using attached guidelines Appendix A ***Assessor Signature:***	1	2	3	4	5
Explain how this topic is addressed in the specific project. (Refer to the Graduate attributes in the Syllabus Appendix B)					

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.					
Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5
Explain how this topic is addressed in the specific project. (Refer to the Graduate attributes in the Syllabus Appendix B)					

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.

Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5

Explain how this topic is addressed in the specific project.
(Refer to the Graduate attributes in the Syllabus Appendix B)

GRADUATE ATTRIBUTE 6	**PROFESSIONAL AND TECHNICAL COMMUNICATION**				
Communicate effectively, both orally and in writing within an engineering context.					
Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5
Explain how this topic is addressed in the specific project. (Refer to the Graduate attributes in the Syllabus Appendix B)					

GRADUATE ATTRIBUTE 7	**SUSTAINABILITY AND IMPACT OF ENGINEERING ACTIVITY**
Demonstrate knowledge and understanding of the impact of engineering activity on the society, economy, industrial and physical environment, and address issues by defined procedures.	

Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5

Explain how this topic is addressed in the specific project.
(Refer to the Graduate attributes in the Syllabus Appendix B)

GRADUATE ATTRIBUTE 8	**INDIVIDUAL, TEAM AND MULTIDISCIPLINARY WORKING**				
Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member and leader in a technical team and to manage projects.					
Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5
Explain how this topic is addressed in the specific project. (Refer to the Graduate attributes in the Syllabus Appendix B)					

GRADUATE ATTRIBUTE 10	**ENGINEERING PROFESSIONALISM**				
Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.					
Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5
Explain how this topic is addressed in the specific project. (Refer to the Graduate attributes in the Syllabus AppendixBA)					

GRADUATE ATTRIBUTE 11	**WORKPLACE PRACTICES**				
Demonstrate an understanding of workplace practices to solve engineering problems consistent with academic learning achieved.					
Mark (Mark with an X using attached guidelines Appendix A) ***Assessor Signature:***	1	2	3	4	5
Explain how this topic is addressed in the specific workplace. (Refer to the Graduate attributes in the Syllabus Appendix B)					

Project Topic:……..

PROJECT ASSESSMENT

Topics	**Assessor**	**Rating (Pg 21)**	**VUT Examiner**
Oral presentation			
Assessment of documentation			
Independent working ability of student			
Technical standard of project			
Technical success of project			
Total			
Graduate Attribute Mark			
Final Mark			

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 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

WBL

INSTRUCTIONAL OFFERING:	Work-place-based Learning
INTERNAL CODE:	EIPRJ4A
INSTRUCTIONAL PROGRAMMES:	Diploma in Electrical Engineering
ASSESSMENT:	Work Based Project
NQF LEVEL:	6
CREDITS:	30
DOCUMENT REVISION:	March 2019

1. Syllabus Content

The specific area of the project is determined by the Employer and mentor. The following represents typical fields of project content: Process Instrumentation

- Programmable devices
- Industrial systems
- Plant Loop Systems

2. Learning Outcomes

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

- 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.

- 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.

- Demonstrate knowledge and understanding of the impact of this project on the society, economy, industrial and physical environment.

- Demonstrate knowledge and understanding of engineering management principles and apply these to the project, as a member and/or leader in a technical team and to manage the project.

- Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.

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

3. Graduate Attributes (GA's)

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

Graduate Attribute 1: Problem Solving

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

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: Knowledge of mathematics, natural science and engineering science is characterized by:

1. A coherent range of fundamental principles in mathematics and natural science underlying a sub-discipline or recognised practice area.
2. A coherent range of fundamental principles in engineering science and technology underlying an engineering sub-discipline or recognised practice area.
3. A codified practical knowledge in recognised practice area.
4. 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 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, 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:

1. Sub-discipline-specific tools processes or procedures.
2. Computer packages for computation, simulation, and information handling;
3. Computers and networks and information infrastructures for accessing, processing, managing, and storing information to enhance personal productivity and teamwork;
4. 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:
1. Audiences are engineering peers, academic personnel and related engineering persons using appropriate formats;
2. 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;
3. Methods of providing information include the conventional methods of the discipline, for example engineering drawings, physical models, bills of quantities as well as subject-specific methods.

Graduate Attribute 7: Sustainability and Impact of Engineering Activity

Demonstrate knowledge and understanding of the impact of engineering activity on the society, economy, industrial and physical environment, and address issues by defined procedures.

Range Statement: The combination of social, workplace (industrial) and physical environmental factors is appropriate to the sub-discipline of the qualification. Evidence may include case studies typical of the technical practice situations in which the graduate is likely to participate.
Issues and impacts to be addressed:
1. Are encompassed by standards and documented codes of practice.
2. Involve a limited range of stakeholders with differing needs.
3. Have consequences that are locally important and are not far reaching.
4. Are well-defined and discrete and part of an engineering system.

Graduate Attribute 8: Individual, Team and Multidisciplinary Working
Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member and leader in a technical team and to manage projects.

Range Statement:
1. The ability to manage a project should be demonstrated in the form of the project indicated in graduate attribute 3.
2. Tasks are discipline specific and within the technical competence of the graduate.
3. Projects could include: laboratories, business plans, design, etc.;
4. Management principles include: 4.1 Planning: set objectives, select strategies, implement strategies and review achievement;
4.2 Organising: set operational model, identify and assign tasks, identify inputs, delegate responsibility and authority;
4.3 Leading: give directions, set example, communicate, motivate;
4.4 Controlling: monitor performance, check against standards, identify variations and take remedial action.

Graduate Attribute 10: Engineering Professionalism
Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.

Range Statement: Evidence includes case studies, memorandum of agreement, code of conduct, membership of professional societies etc typical of engineering practice situations in which the graduate is likely to participate.

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.

4. Graduate attributes assessment

ECSA Graduate attribute	Assessment details
Graduate Attribute 1: Problem Solving Apply engineering principles to systematically diagnose and solve *well-defined* engineering problems.	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Solving of work-based problems must be demonstrated in the context of a well-defined engineering project relevant to the student's work environment.
What is satisfactory performance?	System design, configuration and implementation must be demonstrated to be functional within the requirements of the particular project.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved.

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 the work place.
How is this outcome assessed?	The application of engineering knowledge and practices used in a well-defined project relevant to the work environment must be demonstrated.
What is satisfactory performance?	The engineering knowledge and practices must be appropriate to the requirements of the engineering project.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved. .

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 the work place.
How is this outcome assessed?	The necessary investigations conducted, as well as experiments and data analysis relevant to the work based project must be demonstrated.
What is satisfactory performance?	The investigations, experiments and data analysis must be demonstrated to be appropriate to the requirements of the relevant project.

What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved. .

Graduate Attribute 5: Engineering methods, skills, tools, including Information technology Use appropriate techniques, resources, and modern engineering tools, including information technology, prediction and modelling, for the solution of broadly-defined engineering problems, with an understanding of the limitations, restrictions, premises, assumptions and constraints.	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Students are required to demonstrate the use of appropriate techniques, resources and modern engineering tools in the development or design and implementation of a relevant work based project.
What is satisfactory performance?	Knowledge of the application and use of tools appropriate to the project must be demonstrated.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved.

Graduate Attribute 6: Professional and technical communication Communicate effectively, both orally and in writing within an engineering context.	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Students are required to demonstrate effective communication, both through oral presentations, as well as the written documentation relevant to the project
What is satisfactory performance?	Knowledge of the application and use of tools appropriate to the discipline and the task must be demonstrated.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved.

Graduate Attribute 7: Sustainability and Impact of Engineering Activity Demonstrate knowledge and understanding of the impact of this project on the society, economy, industrial and physical environment.	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Students are required to demonstrate an understanding of the impact of the project on the society, economy, industry and environment.
What is satisfactory performance?	The project must have an impact in the society, economy, relevant industry and physical environment.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved.

Graduate Attribute 8: Individual, Team and Multidisciplinary Working Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member and leader in a technical team and to manage projects**.**	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Students must be able to apply the appropriate engineering principles in order to manage their projects,
What is satisfactory performance?	The demonstration of the use of engineering management principles as to the completion of a well-managed project.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved.

Graduate Attribute 10: Engineering Professionalism Understand and commit to professional ethics, responsibilities and norms of engineering technical practice.	
Where is outcome assessed?	In the work place.
How is this outcome assessed?	Students are required to demonstrate as part of their project their understanding and commitment to ethics and norms of engineering technical practice.
What is satisfactory performance?	A project completed within the ethics and norm as required in engineering practice.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired outcomes can be demonstrated.

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 demonstrate the ability to apply appropriate theoretical knowledge and understanding in order to complete the work place based project..
What is satisfactory performance?	Appropriate and applicable theoretical knowledge is used to complete the project.
What is the consequence of unsatisfactory performance?	Students must work on the project until the desired results can be achieved.

5. Module Credits

L	TL	ML	T	Tt	Mt	P	Tp	Mp	X	Tx	Mx	A	Ta	E	Me	Credit
0	1	1	0	1	1	300	1	1	0	1	1	16	1	14	1	30

6.

L	Lectures Sessions	**TL**	Lecture Duration	**ML**	Work per Lecture period
T	Tutorials Sessions	**Tt**	Tutorial Duration	**Mt**	Work per tutorial period
P	Practical Sessions	**Tp**	Practical Duration	**Mp**	Work per practical period
X	Other contact Sessions	**Tx**	Other Duration	**Mx**	Work other period
A	Assessment	**Ta**	1 Hour	**E**	Work outside (Me = 1)

Module Knowledge Profile

Mathematical Sciences	Natural Sciences	Engineering Sciences	Engineering Design	Computing and IT	Complementary Studies	Work Integrated learning
						30

APPENDIX C