



**TAYLOR'S UNIVERSITY**

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*School of Engineering*

**Electrical and Electronic Engineering Group**

**Project 1**

**Subject Code: PRJ60903**

**Student Handbook**

**For**

**Electrical and Electronic Engineering Program**

**(5<sup>th</sup> Semester / 3<sup>rd</sup> Year)**

**March 2018**

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## School of Engineering Programme Educational Objectives (PEOs)

PEO1	Achieve a high level of technical expertise and excel in positions in Engineering practice, research or other fields they choose to pursue
PEO2	Conceive, design, implement and operate Engineering systems, processes and products that consider functionality, safety, cost effectiveness and sustainability using sound principles
PEO3	Assume and aspire to leadership positions at both multinational companies and enterprises
PEO4	Pursue lifelong learning, such as graduate studies and other continual professional development activities

## Electrical and Electronic Engineering Programme Outcomes (POs)

PO1	Apply the knowledge of mathematics, science, engineering practices, innovation techniques, entrepreneurship and human factors to provide value-adding solutions to complex Electrical and Electronic Engineering challenges.
PO2	Identify, formulate, analyse and document complex engineering challenges to arrive at viable solutions and substantiated conclusions.
PO3	Conceive, Design, Implement and Operate solutions for complex engineering challenges that meet specified requirements with appropriate consideration for public health and safety, cultural, societal, environmental and economical considerations.
PO4	Conduct research and investigation into complex challenges using methods which include experiment design, analysis of data and synthesis of information to provide valid conclusions.
PO5	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an awareness of the accompanying assumptions and limitations.
PO6	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal, economical and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO7	Explain the global impact of professional engineering solutions in societal, economical and environmental contexts and demonstrate knowledge of and need for sustainable development.
PO8	Apply professional and ethical responsibilities of engineering practice.
PO9	Effectively communicate complex engineering activities, both orally and in a written form, in both technical & non-technical contexts.
PO10	Function effectively as an individual and in multidisciplinary settings with the capacity to be a leader.
PO11	Recognise the importance of lifelong learning and engaging in continuous professional development activities in accordance with technological change.
PO12	Effectively manage projects in multidisciplinary environments and apply project management tools and techniques to one's own work, as a member and leader in a team to satisfy stakeholders requirements.

## Electrical and Electronic Engineering Group Project 1 Learning Outcomes (LOs)

On completion of this subject, students will be able to:

LO1	Demonstrate effectiveness in communicating technical activities in oral and written form (PO9)
LO2	Apply project management tools and techniques in effective project initiation and planning (PO12)
LO3	Conceive and Design effective solutions for complex engineering challenges (PO3)
LO4	Apply appropriate techniques, modern engineering and IT tools to an engineering design project (PO5)
LO5	Demonstrate effectiveness as a team member and/or team leader (PO10)
LO6	Demonstrate the knowledge of sustainable development in designing solutions for complex engineering challenges (PO7)
LO7	Identify activities to cope with technological needs of the future (PO11)
LO8	Apply knowledge of scientific and engineering practices to provide viable solutions for complex Electrical Engineering challenges. (PO1)

## LO-PO mapping:

For Electrical & Electronic Engineering Group Project 1:

		Programme Outcomes (POs) and Taylor's Graduate Capabilities (TGC)											
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
Learning Outcomes, LOs	LO 1									X			
	LO 2												X
	LO 3			X									
	LO 4					X							
	LO 5										X		
	LO 6							X					
	LO 7											X	
	LO 8	X											

## MODULE INFORMATION

The module coordinator for Electrical and Electronic Engineering Group Project 1 is given as below:

Coordinator : Dr. Phang Swee King  
 Email : [sweeking.phang@taylors.edu.my](mailto:sweeking.phang@taylors.edu.my)  
 Office : C5A.45, Taylor's University Lakeside Campus

### Timetable

Lectures : Monday (0800 – 1000) only on the first day  
 Discussions/ Workshops : Monday (0800 – 1000)  
 Wednesday (0800 – 1000)  
 \* Week 12 is e-learning week

### Remarks:

Any changes to this handbook shall be announced through TiMES (Moodle)

## 1.0 Introduction

Electrical and Electronic Engineering Group Project 1 is a project-based module offered for all EE third year students. This module is compulsory and carries three (3) credit hours out of student's total credit hours.

Students are required to form and work in groups. Each group will report to the coordinator with whom they must consult regarding the practical aspects of the project and the writing of the documentation.

The assessment of this subject is based on:

#### \* Logbook

Mark: 10% of overall assessment

Date of Submission: **Every Wednesday (Week 2 to Week 11)** during the Discussion Session, final submission **before End of Week 12**

Type of Assessment: **Individual**

- \* Interim Report
  - Mark: 20% of overall assessment
  - Date of Submission: [Week 7](#)
  - Type of Assessment: [Group](#)
  
- \* Final Report
  - Mark: 30% of overall assessment
  - Date of Submission: [Week 12](#)
  - Type of Assessment: [Group](#)
  
- \* Presentation
  - Mark: 15% of overall assessment
  - Date of Submission: [Week 13](#)
  - Type of Assessment: [Individual](#)
  
- \* Peer Assessment
  - Mark: 5% of overall assessment
  - Date of Submission: [Week 13](#)
  - Type of Assessment: [Individual](#)
  
- \* Artefact Assessment
  - Mark: 20% of the overall assessment
  - Date of Assessment: [Week 14](#)
  - Type of Assessment: [Group](#)

## **2.0 Project Brief**

Electrical & Electronic Engineering Group Projects 1 is introduced to provide a platform for the students to learn and experience the concept of conceiving and designing a product through the utilisation of the sophisticated electrical and electronics technology available in the market.

The students will work in teams to solve an engineering challenge, analyse an engineering failure or build an engineering product. Student evaluation for this subject is in two parts: group and individual. The individual component is assessed through student portfolios (logbook), presentation, and peer assessment while the group effort is based on project proposal (interim report), final report and artefact assessment.

The objective of this project is to provide experiences to electrical and electronic engineering students in designing an autonomous drone system for surveillance application, with the consideration of energy efficiency and safety to the public. The expected outcome of the project is a working prototype of drone of less than 3 kg, capable to fly autonomously without the interference of remote pilot based on GPS locations. The drone will be equipped with camera for real-time video surveillance on the ground station during flight. The complete systems will be simulated in MATLAB, and thoroughly tested via actual flying experiments.

Teams of students will be assigned into groups of four members and each team works on the same system while the intra-team communication is vital for the successful delivery of the project. These groups will be formed randomly and will be free from gender or intellect bias.

In addition, this capstone project needed to have significant input from industry, the teams would need to be exposed to the more commonly used industry practices and implement them in their conceptual model. Specifically, the following key industry practices should be highlighted.

- Safety, Health and the Environment
- Sustainability
- Engineering Ethics
- Lean Manufacturing
- Project Management

The system must be safe to use and be of sound engineering analysis i.e. an efficient and effective engineering system. Performance of the system is related to integrating the system to the mechanical design fixtures, proper configuration of the software, and good consideration of users.

Each student in the group is required to fill in their particulars and sign on the *Project Acceptance Form* which can be obtained at the end of this Handbook. The form is to be **submitted to the Module Coordinator no later than the end of Week 3.**

### 3.0 Student and Module Coordinator Requirements

This section provides guidelines about the project requirements that the Module Coordinator and students are expected to follow.

The students must:

- \* keep all the evidences about the works that they have done.
- \* show or submit their Logbook **regularly** for assessment.
- \* submit all documents and information on the dates prescribed. **Note that all submission of documents for this module is to be made to the Module Coordinator.**
- \* inform their Module Coordinator where their project work will be performed and where members of staff can contact them during the period they are working on their project.
- \* attend and be punctual for meetings.
- \* not plagiarise work of others.
- \* comply to all laboratory rules and regulations and ensure safety at all times.

The Module coordinator is expected to:

- \* maintain regular contact with the student to supervise students' progress.
- \* work with students to clearly define the aims and objectives of the project and the envisaged end point.
- \*

- \* check evidences presented by the students and test their understanding about the learning outcomes.

## 4.0 Weekly Activities

Students are expected to allocate **7 hours per week** for this module, which shall include:

- **1 hour per week of project meeting with Module Coordinator**
- **1 hour per week of project discussion with all project group members**
- **5 hours per week of project work** (which may include discussion, design, individual work, industrial visits (if any), project documentation and other project related work)

The schedule of the meeting should be determined by the Module Coordinator together with the students. Students are to present their progress and updates in their project, and present their Project Logbook to be signed by the Module Coordinator.

## 5.0 Resource Management

Students should submit their proposed budget to the **Module Coordinator** for approval. The deadline of submission should be decided by the Module Coordinator. Students should get approval from Module Coordinator prior to purchasing any component. Should there be any necessary changes to the approved budget in future, the students may submit a revised budget for approval. **Note: Without the prior approval of the budget by the Module Coordinator, all purchases made are not claimable.**

## 6.0 Guidelines and Requirements for Assessments

### 6.1 Project Logbook

The logbook constitutes to **10%** of the overall assessment. Students are also required to use an individual Project Logbook which they will use to record all conceptual or detail design sketches, thoughts processes, testing procedures, meeting discussions, contact details of people involved in project, and all other information related to the project. A Project Logbook should be treated as a precompiled document of all ideas or thoughts of the project. A good logbook would allow someone else with the skill but without the knowledge of the project to be able to reproduce the work of the Logbook owner.

Students are to update the logbook continuously and progressively. Each student is to **present Project Logbook to project meetings with Module Coordinator** (every week) for it to be assessed and **signed-off by the Module Coordinator**. Total number of pages allowed for the logbook is **60** (5 pages per week in average). Final marks on Project Logbook will be awarded by the module coordinator based on the progressive update of the Logbook.

A summary table should be added to the end of the compiled logbook in which a brief explanation about the activities done to address all the LOs is given as well as the reference to details of those activities in the logbook text.

**Project Logbook shall be submitted to Module Coordinator before the end of Week 12. Late submissions will NOT be accepted.**

## 6.2 Interim Report Writing Guidelines

The interim report constitutes to **20%** of the overall assessment. The objectives of the interim report are to ensure that the students understand the background study, purpose, objectives and deliverables of the project. It will also help to provide a basis of the timeline in order to achieve project milestones, to provide a plan for budget allocation and to define the responsibilities of each group member.

### Content

Students are required to submit the project proposal with the following sections:

- Cover Page
- Content page
- Introduction & Background (introduction to the project, background/history, past or current work)
- Objective (objective, challenge statement)
- Solution Concept
- Key Deliverables (at end of semester, at end of project)
  - Bill of Materials
  - Proposed Budget
  - Gantt Chart
  - Linear Responsibility Chart
  - Conclusion
  - Reference

### Project Proposal Submission Requirements

The softcopy of the interim report from each group should be **submitted to the Module Coordinator via Turnitin no later than the end of Week 7**. Late submissions will **NOT** be accepted.

## 6.3 Final Report Writing Guidelines

The report constitutes to **30%** of the overall assessment. The objective of the report is to document all technical information of the project in such a way that a third party with the skill (i.e. an engineer) without the knowledge of the project is able to understand the area of interest of the project, objective, procedures involved, reasons behind material selection, project outcomes and recommended improvements of the project.

### Content

**Each group** is required to submit a **Group Project Report** which captures the details of work that they have performed throughout the semester. Final reports should contain the following sections:

- Content page
- Executive summary
- Introduction & Background
- Conceive (discussion about the conceiving the solution for the given challenge)
- Design (this section shall include detail explanation of the design or study of group project, only final design & drawings to be included in this section). The subsections should be:



- Architecture
- Configuration
- Integration
- Detailed Design
- Solution Sustainability
- Engineering Analysis
- Simulations and Modelling
- Conclusion and Recommendation
- References
- Appendices
  - Business Plan
  - Other appendices

### **Project Report Submission Requirements**

The softcopy of the group report should be submitted to Turnitin in Times before the end of **Week 12**. Late submission will NOT be accepted.

### **6.4 Final Presentation and Peer Assessment**

The individual presentations will be held in Week 13 and it carries **15%** of the total marks. Students are required to present the part of work that they involved individually in the project. At the end of Group Project 1, the main hardware of the artefact must be completed and functional. Then the algorithms and additional accessories will be added in Group Project 2. Students are expected to be familiar in the details of the project and to be able to address questions that will be asked during the assessment.

### **6.5 Artefact Assessment**

The artefact assessment will be held in Weeks 14. **20% is awarded as Artefact Assessment**, which is based on group presentation. Artefact assessment is done by external and/or internal judges during the engineering fair. Time and location of artefact assessment will be posted in TIMEs. Students are expected to check and be aware of the timing and location of their table. Any issues regarding the arrangement of the assessment **MUST be addressed to the Module Coordinator at least one week prior to date of assessment**.

On the day of assessment, students are required to arrive at the location of assessment **5 minutes before the assessment time with all necessary tools and equipment to ensure the presentation runs smoothly with no interruptions**. Each group will be given approximately 10 minutes for group presentation and 10 minutes for each individual presentation.

### **6.6 Peer Assessment**

There will also be a Peer Assessment survey conducted through Google Doc that every group member must participate. This will contribute 5% towards the final mark.

## 7.0 Return-on-Failure (RTF)

Learning from mistakes is an important component of innovation. Without trying and failing and learning from failure, innovation would not be possible. Hence students are encouraged to perform failure analysis, reflection and learning from such an experience. Each student is required to submit a Return on Failure form in week 6 and week 12. This can be shown to the supervisor during the logbook discussion. In the Final Report, there must be a section that discusses return on failure and the learning that has taken place.

## 8.0 Turnitin submission

The School adopts a very serious view concerning plagiarism. Plagiarism constitutes academic misconduct which will result in a student failing this module outright. The **Interim Report** and the **Final Report** are required to be submitted to Turnitin through TIMES. They will not be accepted for assessment if they are not evaluated for plagiarism. Not being accepted for assessment will result in zero marks. The maximum allowed similarity is 30% and the similarity to a single source should not be more than 5%.

## 9.0 Late submission penalty

Late submissions will be subjected to a mark deduction penalty following the policy of the School, which is a deduction of 10% for the first day and 5% for each subsequent day late. A weekend counts as 1 day. **This penalty applies to all assessments of this module.**

## 10.0 Project Closure

Each project group needs to ensure that the project is properly closed before marks for this module is released to students. Project Closure requires students to complete all activities below:

1. Cleaning up of lab area / workplace used to perform project discussion or coursework for the entire semester. This could either be the lab, workshop, classroom, discussion room, concourse or all other areas that has been used by students for the purpose of the project. The area has to be cleaned to its original condition.
2. Returning of machines, equipment, accessories or parts used for the project which was obtained by means of sponsorship, bought for the project by the university or bought by students in which the cost of purchase is reimbursed by the university or sponsorship fund. Students are to return these items to the **Senior Lab Officer, Mr Rahim and obtain his approval and signature on a Project Closure Form.**

Once signature is obtained, this form shall be **submitted to the Module Coordinator before the end of Week 14** (before students leave for their semester break). **Each group** is to submit **ONE form**.

The Claim Details Form and the Submission for Claim Acknowledgement Form must be attached with all the original receipts. The original receipts should be neatly glued to A4 sized papers. These two Claim forms and the receipts are to be submitted together with the Project Closure Form in Week 14 to the Module Coordinator. Note: Order invoices are not receipts. Invoices are not considered proof of payment hence they are not acceptable for claims. Claims can only be approved based on **proof of payment** (and only for items on the prior approved budget).

If receipts are not available for certain online purchases, a printout of the invoice accompanied by the student's bank statement indicating payment to the vendor may be submitted as proof of purchase. The bank statement must show the same vendor and the same amount as that on the invoice. Barring such exceptional circumstances, only receipts are acceptable as proof of payment in all cases. Please ensure to keep all your receipts. Without receipts, no claims are allowed.

Upon receiving their claims through the Module Coordinator, the student is required to sign and submit the Payment Receipt Form to the Module Coordinator.

A copy of the Project Closure Form, the Claim Details Form, the Submission for Claim Acknowledgement Form and the Payment Receipt Form can be obtained at the next section of this Handbook.

**11.0 Project Acceptance Form**

**TAYLOR'S UNIVERSITY  
SCHOOL OF ENGINEERING**

**ELECTRICAL & ELECTRONIC ENGINEERING GROUP PROJECT 1 (PRJ60903)  
PROJECT ACCEPTANCE FORM**

(To be submitted before the end of Week 3 to Module Coordinator)

**MODULE COORDINATOR'S NAME: DR PHANG SWEE KING**

**PROJECT TITLE: AUTONOMOUS DRONE SURVEILLANCE SYSTEMS**

**GROUP NAME: .....**

Student's Name	ID Number	Mobile No.	Signature
1) *			
2)			
3)			
4)			
5)			

\* Group leader

Verified by

MODULE COORDINATOR:.....

DATE:.....



Lab housekeeping:

**1. Cleanliness**

All rubbish and used parts have been disposed from bench tops and floors, machines (blades, cutting jigs, etc) cleaned and returned to original state

Yes  No

**2. Properties**

All lab equipment, books, catalogues, etc borrowed by students have been returned

Yes  No

**3. Safety**

All safety measures has been taken, i.e. no liquid spills, machines turned off, power switched off, sharp objects removed / covered to avoid injury, liquid bottles sealed and kept in designated storage area, no obstructing items that can cause trips / falls, etc.

Yes  No

Checked by

Lab Manager:.....

Date:.....

Verified by

Module Coordinator:.....

Date:.....

**13.0 Claim Details Form**

**Claim Details**

Item No.	Receipt date	Amount (RM)	Remark	Group	Contact person/email	Bank Account

Module coordinator's signature:

\_\_\_\_\_ )  
(Name: )

## 14.0 Submission for Claim Acknowledgement Form

### Submission for Claim Acknowledgement

I, \_\_\_\_\_

I/C Number \_\_\_\_\_ have submitted claims

of RM \_\_\_\_\_ with attached original receipts verified by module

coordinator named \_\_\_\_\_, for project

module \_\_\_\_\_, Sem Mar/Aug \_\_\_\_\_.

I also acknowledge that I've been authorized by my team members to receive the claimed

money.

Signature of Student,

Signature of Module Coordinator,

\_\_\_\_\_  
(Name: \_\_\_\_\_ )

Date:

\_\_\_\_\_  
(Name: \_\_\_\_\_ )

Date:

Signature of Stream Coordinator,

\_\_\_\_\_  
(Name: \_\_\_\_\_ )

Date:



## 15.0 Payment Receipt Form

### Payment Receipt

I, \_\_\_\_\_

I/C Number \_\_\_\_\_ have received an amount

of RM \_\_\_\_\_

from \_\_\_\_\_, School of Engineering.

Signature of Recipient,

Signature of Module Coordinator,

\_\_\_\_\_  
(Name: \_\_\_\_\_ )

Date:

\_\_\_\_\_  
(Name: \_\_\_\_\_ )

Date:

## 16.0 Logbook Marking Rubric

Student Name: .....

Area	LO	Total Score	Weight	Actual Mark	Scoring Band	Criteria
Formatting	LO1	20	2	10	8-10	Weekly submissions are neat and comprehensive with clear justifications.
					5-7	Weekly submissions are comprehensive but not arranged accordingly. Some justification is available.
					0-4	Weekly submissions are presented in an untidy manner with minimal of no justifications.
Evidences	LO1	20	2	10	8-10	All evidences of project activities are available at the end of the logbook submission, and a fully completed project closure form submitted.
					5-7	Important evidences of conceive and design are available at the end of the logbook submission, and a fully completed project closure form submitted.
					0-4	Insufficient evidences are available for conceive and design.
Portfolio	LO1	20	2	10	8-10	All the evidences for LOs attainment are accurately referred to in the portfolio.
					5-7	Important evidences for LOs attainment are accurately referred to in the portfolio.
					0-4	Insufficient evidences for LOs attainment are referred to in the portfolio.
Self learning activities	LO8	20	2	10	8-10	All the voluntary and self-motivated pursuit of knowledge for doing the project at the best level are clearly explained in the logbook with details.
					5-7	Some of the voluntary and self-motivated pursuit of knowledge for doing the project are clearly explained in the logbook.
					0-4	The voluntary and self-motivated pursuit of knowledge for doing the project are not adequately explained in the logbook.
Fluency & Clarity	LO1	20	2	10	8-10	The presentation of the submission was fluent and concise, with minimal grammatical errors in the English Language.
					5-7	The presentation of the submission was mostly fluent and rather concise with only average grammatical errors in the English Language.
					0-4	The presentation of the submission was hesitant and unclear
<b>Total</b>		<b>100</b>				

## 17.0 Interim Report Marking Rubric

Student Name: .....

Area	LO	Total Score	Weight	Actual Mark	Scoring Band	Criteria
Format		5	0.5	10	8-10	Has all the sections and presented in a neat and tidy manner.
					5-7	Has most sections presented in a neat and tidy manner.
					0-4	Inadequate sections.
Executive Summary & Scope	LO3	5	0.5	10	8-10	Precise and concise executive summary that gives the overall view of the project and its expected outcomes.
					5-7	Moderately precise executive summary with overall view of the project.
					0-4	Poorly constructed executive summary with many vague areas.
Introduction, Objectives, and Literature Review	LO3	5	0.5	10	8-10	Introduction shows a clear analysis and identification of root causes of a given challenge.
					5-7	Introduction shows a clear analysis of root causes of a given challenge only.
					0-4	Introduction shows no analysis and identification of root causes of a given challenge.
Conceive	LO3	20	2	10	8-10	The process of conceiving the solution for the challenge(s) given in the project is clearly explained and the selection of the proposed solution is well justified.
					5-7	The process of conceiving the solution for the challenge(s) given in the project is clearly explained however, the selection of the proposed solution is moderately justified.
					0-4	The process of conceiving the solution for the challenge(s) given in the project is not adequately explained and the selection of the proposed solution is poorly justified.
Materials/Resources	LO3	10	1	10	8-10	Cite in accuracy all the materials and resources required, as well as the means to obtain them, in order to complete the project in an excellent manner.
					5-7	Cite in accuracy all the materials and resources required in order to complete the project in an excellent manner.
					0-4	Not all materials and resources required were cited.

Proposed Budget	LO2	10	1	10	8-10	Detailed breakdown of budget with clear justifications and a plan to source for sponsorship.
					5-7	Detailed breakdown of budget with unclear justifications and a plan to source for sponsorship.
					0-4	Budget is incomplete with poor justification and no plan to source for sponsorship.
Gantt Chart	LO2	10	1	10	8-10	Accurate format of Gantt Chart with precise and achievable timeline
					5-7	Accurate format of Gantt Chart
					0-4	Less accurate format of Gantt Chart with unclear timeline
Linear Responsibility Chart/Organizational Structure (WBS)	LO2	10	1	10	8-10	Equal and fair workload allocation with clear deliverables and milestones
					5-7	Equal and fair workload allocation
					0-4	Unfair workload allocation
Risk and Risk Management	LO2	10	1	10	8-10	Developed a risk management plan and provided necessary ideas on risk mitigation
					5-7	Developed a risk management plan and provided limited ideas on risk mitigation
					0-4	Not all risk were addressed and poor risk mitigation suggestions
Conclusions and Recommendations	LO3	10	1	10	8-10	Closed the project in a professional manner and documented important and relevant conclusions and recommendations for improvement
					5-7	Closed the project and documented substantial conclusions and relevant recommendations for improvement
					0-4	Project was not adequately closed and conclusion documented is not relevant
References		2.5	0.25	10	8-10	All of the referencing is presented in a proper format with most up to date references.
					5-7	Most of the referencing is presented in proper format.
					0-4	The referencing is presented in wrong format.
English		2.5	0.25	10	8-10	No mistakes in grammar, spelling, punctuation
					5-7	Few mistakes in grammar, spelling, punctuation
					0-4	Many mistakes in grammar, spelling, punctuation
<b>Total</b>		<b>100</b>				

## 18.0 Final Report Marking Rubric

Student Name: .....

Area	LO	Total Score	Weight	Actual Mark	Scoring Band	Criteria
Format		5	0.5	10	8-10	Has all the sections and presented in a neat and tidy manner.
					5-7	Has most sections presented in a neat and tidy manner.
					0-4	Inadequate sections.
Introduction & Objectives		5	0.5	10	8-10	Introduction shows a clear analysis and identification of root causes of a given challenge.
					5-7	Introduction shows a clear analysis of root causes of a given challenge only.
					0-4	Introduction shows no analysis and identification of root causes of a given challenge.
Conceive	LO3	10	1	10	8-10	The process of conceiving the solution for the challenge(s) given in the project is clearly explained and the selection of the proposed solution is well justified.
					5-7	The process of conceiving the solution for the challenge(s) given in the project is clearly explained however, the selection of the proposed solution is moderately justified.
					0-4	The process of conceiving the solution for the challenge(s) given in the project is not adequately explained and the selection of the proposed solution is poorly justified.
Design	LO3	20	2	10	8-10	<p><b>Architecture:</b> The breakdown of the super-system into the sub-systems is done appropriately and the requirements of them are identified accurately.</p> <p><b>Configuration:</b> The specifications of the super-system and the sub-systems are identified and the selections of components/materials are well justified.</p> <p><b>Integration:</b> The selected hardware and/or software are proven to be compatible through appropriate modelling, simulations and optimisation of various parts.</p> <p><b>Detailed design:</b> The detailed engineering drawings and bill of material (BOM) are presented.</p>
					5-7	<p><b>Architecture:</b> The breakdown of the super-system into the sub-systems is done appropriately and the requirements of them are identified fairly accurately.</p> <p><b>Configuration:</b> The specifications of the super-system and the sub-systems are identified and the selections of components/materials are poorly justified.</p> <p><b>Integration:</b> The selected hardware and/or software are partially proven to be compatible through appropriate modelling, simulations and optimisation of various parts.</p>

						<p><b>Detailed design:</b> The engineering drawings and bill of material (BOM) are presented but with not enough details.</p>
					0-4	<p><b>Architecture:</b> The breakdown of the super-system into the sub-systems is not done appropriately and the requirements of them are not identified adequately.</p> <p><b>Configuration:</b> The specifications of the super-system and the sub-systems are not adequately identified and the selections of components/materials are not justified.</p> <p><b>Integration:</b> The selected hardware and/or software are claimed to be compatible however not enough modelling, simulations and optimisation is done to prove it.</p> <p><b>Detailed design:</b> The engineering drawings and bill of material (BOM) are presented poorly.</p>
Engineering analysis	LO8	20	2	10	8-10	Clear APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. Clear explanation and justification on chosen approach is provided.
					5-7	Some APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. Only marginal explanation and justification is provided on chosen approach.
					0-4	Limited APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. No explanation and justification is provided on chosen approach.
Simulation and modelling	LO4	10	1	10	8-10	Clear application of appropriate techniques, resources, modern engineering and IT tools (e.g., Excel, MATLAB, simulation tools, ETAP, CFD, SolidWorks, ANSYS, Design of Experiment, etc.) for the project.
					5-7	Some application of appropriate techniques, resources, modern engineering and IT tools or equipment was noticed.
					0-4	Minimal application of appropriate techniques, resources, modern IT tools or equipment in the project.
Sustainability	LO6	5	0.5	10	8-10	There is proper evaluation of the solution implications toward the three pillars of sustainability i.e. the economics, social, and environmental pillars.
					5-7	There is some evaluation of the solution implications toward sustainable development.

					0-4	There is no adequate evaluation of the solution implications toward sustainable development.
Conclusions and Recommendations		5	0.5	10	8-10	Closed the project in a professional manner and documented important and relevant conclusions and recommendations for improvement
					5-7	Closed the project and documented substantial conclusions and relevant recommendations for improvement
					0-4	Project was not adequately closed and conclusion documented is not relevant
References / Appendix		5	0.5	10	8-10	All of the referencing is presented in a proper format with most up to date references. All evidences, attachments, appendices are clearly attached to support items presented in the project report.
					5-7	Most of the referencing is presented in proper format. Evidences, attachments, appendices are mostly attached but there are items presented in the project report that does not have supporting documents.
					0-4	The referencing is presented in wrong format. No evidence, attachments, appendices are attached.
Business Plan	LO3	10	1	10	8-10	The business plan covers Premise, Processes, Production, People, Price, and Promotion sections in a logical manner with sufficient justifications.
					5-7	The business plan covers some of the sections mentioned above in a logical manner with sufficient justifications.
					0-4	The business plan is not presented or does not cover most of the sections mentioned above or there is not enough justifications on the decisions.
English		5	0.5	10	8-10	No mistakes in grammar, spelling, punctuation
					5-7	Few mistakes in grammar, spelling, punctuation
					0-4	Many mistakes in grammar, spelling, punctuation
<b>Total</b>		<b>100</b>				

## 19.0 Presentation Marking Rubric

Student Name: .....

Area	LO	Total Score	Weight	Actual Mark	Scoring Band	Criteria
Presentation Outline	LO1	5	0.5	10	8-10	Outline and flow of presentation clearly stated and explained at the start of the presentation.
					5-7	Outline and flow of presentation stated at the start of the presentation.
					0-4	Outline and flow of presentation not stated.
Formatting	LO1	5	0.5	10	8-10	Has covered 7 to 8 items during the presentation
					5-7	Has covered 3 to 6 items during the presentation
					0-4	Has covered 1 or 2 items only during the presentation
Project Achievement and Summary Review	LO8	30	3	10	8-10	Student explains thoroughly all the deliverables that the project has achieved and provided an in depth knowledge in the subject by relating the Learning Outcomes to the project work. A thorough overview of the project was provided with all key areas covered in a concise and precise manner.
					5-7	Student explains partially all the deliverables that the project has achieved and provided an in depth knowledge in the subject by relating the Learning Outcomes to the project work. A thorough overview of the project was provided with all key areas covered.
					0-4	Student explains partially all the deliverables that the project has achieved and showed poor knowledge in the subject. An unclear overview of the project was provided with lacking key areas covered.
Recommendations for Improvements	LO6	20	2	10	8-10	Student provides 4 to 5 recommendations for improvements in the project work from their observation and experience working on the project with appropriate and accurate justification. Evidence and supporting materials for all recommendation was also provided.
					5-7	Student provides 1 to 3 recommendations for improvements in the project work from their observation and experience working on the project with appropriate and accurate justification. Evidence and supporting materials for all recommendation was also provided.
					0-4	Student failed to provide and recommendation for improvements for the project.
Teamwork		10	1	10	8-10	The presentation was evenly delivered and participated by the entire team
					5-7	The presentation was delivered and participated by only half the team



					0-4	Only one team member delivered the presentation
Fluency & Clarity	LO1	10	1	10	8-10	The presentation was fluent and concise, with no pauses or grammatical error
					5-7	The presentation was mostly fluent and rather concise with only small faults, and slight hesitant
					0-4	The presentation was hesitant and unclear
Question & Answer	LO8	20	2	10	8-10	Student was able to answer all questions posed by Module Coordinator/Supervisor accurately and shows in depth knowledge in the Learning Outcomes
					5-7	Student was able to answer most questions posed by Module Coordinator/Supervisor accurately and shows in depth knowledge in the Learning Outcomes
					0-4	Student was unable to answer questions posed by Module Coordinator/Supervisor and shows in poor knowledge in the Learning Outcomes
<b>Total</b>		<b>100</b>				

## 20.0 Peer Assessment Rubrics

Student Name: .....

Area	LO	Total Score	Weight	Actual Mark	Scoring Band	Criteria
Contributions		20	2	10	8-10	Routinely provides useful ideas when participating in the group and in classroom discussion. A leader who contributes a lot of effort.
					5-7	Usually provides useful ideas when participating in the group and in classroom discussion. A strong group member who tries hard!
					0-4	Sometimes provides useful ideas when participating in the group and in classroom discussion. A satisfactory group member who does what is required.
Problem-solving		20	2	10	8-10	Actively looks for solutions to problems.
					5-7	Refines solutions suggested by others.
					0-4	Does not try to solve problems or help others solve problems.
Attitude		20	2	10	8-10	Proactive and always has a positive attitude about the task(s).
					5-7	Moderately proactive and often has a positive attitude about the task(s).
					0-4	Not proactive and has a negative attitude about the task(s).
Focus on the task		20	2	10	8-10	Consistently stays focused on the task.
					5-7	Focuses on the task for most of the time.
					0-4	Rarely focuses on the task.
Working with others		20	2	10	8-10	Always listens to, shares with, and supports the efforts of others. Tries to keep people working well together.
					5-7	Usually listens to, shares, with, and supports the efforts of others. Does not cause problem in the group.
					0-4	Rarely listens to, shares with, and supports the efforts of others. Not a good team player.
<b>Total</b>		<b>100</b>				

### Guidelines for Peer Assessment

1. A link to Google Form will be posted in TIMeS.
2. After filling the personal particulars, the student will assess their peers based on the listed criteria.
3. To avoid the exploitation of this assessment, students must write a short description to justify the awarding of maximum mark to a particular criterion.

## 21.0 Artefact Assessment Rubric

### Taylor's Engineering Fair Awards **ME/EE Taylor's Capstone Project Award 1**

Project Title:

Judge:

5= Excellent      4= Good      3= Average      2=Weak      1=Poor

Criteria	Definition	Band	Score
<b>Innovation (LO3)</b>	<b>Innovation</b> in engineering design is clearly demonstrated on artefacts	(1-5) Marks	
<b>Project Idea and Design (LO6)</b>	Concept(s) and/or hypothesis for the design project have demonstrated the following criteria: <ul style="list-style-type: none"> <li>• <b>Technologically</b> feasible</li> <li>• <b>Economically</b> viable</li> <li>• <b>Environmentally</b> Friendly</li> <li>• <b>Socially</b> Acceptable</li> </ul>	VOID	
		(1-5) Marks	
		(1-5) Marks	
		(1-5) Marks	
<b>Poster/Demo (LO3)</b>	Design solution principles have been applied to complete the engineering design project using the following process: <ul style="list-style-type: none"> <li>• <b>ARTEFACT/POSTER</b> - Shows design aesthetics.</li> <li>• <b>RESOURCES</b> - The use of resources is optimum.</li> <li>• <b>MANUFACTURABILITY</b> - The design is easy to be manufactured.</li> <li>• <b>DESIGN SOLUTION</b> - Design solutions are clear and complete. Will allow unfamiliar person with the project to reproduce the work</li> </ul>	VOID	
		(1-5) Marks	
		(1-5) Marks	
		(1-5) Marks	
<b>Presentation</b>	Exhibition booth and explanation provided by group members were accurate, knowledgeable, clear and shows teamwork cohesiveness	(1-5) Marks	
<b>Total score for Capstone Project Award (Total = 50 marks)</b>			
Successful rate 5= Excellent    4= Good    3= Average    2= Week    1= Poor			
<b>Additional comments from Judge:</b>			