UNIVERSITI TEKNOLOGI PETRONAS

ENGINEERING TEAM PROJECT (MEB 2063)

GUIDELINES

(CMCO Compliance)

MAY 2020

UNIVERSITI TEKNOLOGI PETRONAS
32610 Seri Iskandar, Perak Darul Ridzuan, Malaysia.

TABLE OF CONTENTS

1. INTRODUCTION

This course is offered to the 3rd year engineering students. The subject is designed to ensure that students will acquire knowledge in conducting research and development by working in a team. This includes conducting literature research, preparing a project proposal, performing preliminary design concepts, simulation, and evaluation for the best concept and designing the selected concept.

Students will be divided into groups that consist of five to six members of various disciplines namely Mechanical, Electrical & Electronics, Chemical, Civil and Petroleum Engineering. Please note that in view of the dissimilar number of students registering for this module from each engineering program, there are groups that may not have students from all five engineering disciplines. One or two supervisors will be assigned to each group.

2. OBJECTIVES AND LEARNING OUTCOMES

The objectives of the Engineering Team Project (ETP) course are as follows:

- To inculcate teamwork spirit.
- To develop leadership skills as well as technical competency in:
    - delegation of various tasks
    - analysing engineering problems
    - performing engineering design
    - enhancing software-related skills
- To broaden the knowledge on commercially available off-the-shelf equipment as well as industrial equipment.
- To develop knowledge in integrating components into a comprehensive working system.
- To provide a platform for advanced design courses.
- To nurture creativity, innovativeness, and business acumen.
- To provide exposure on project management skills

The course outcomes are; at the end of this course, students should be able to:

1. Develop design solution for solving societal issue.
2. Demonstrate effective communication, report writing, presentation and entrepreneur skills
3. Apply engineering knowledge and solve engineering design problem.
4. Work in a multi-disciplinary team-based project work.
5. Apply the principle of project management.
6. Apply proper design process to produce creative and innovative solution.
7. Demonstrate effective communication, report writing, presentation and entrepreneur skills.

Note: These are <u>NOT</u> the objectives of the project work you are working on.

3. SCOPE OF PROJECT

The scope of the project includes:

- To generate conceptual designs
- To perform necessary engineering calculations
- To generate engineering drawings of the selected concept
- To develop and propose a design concept

The final result of the project shall be exhibited in the form of engineering drawings, reports**, and a DESIGN CONCEPT**. The conceptual design should incorporate as many as possible elements or components of Electrical / Electronics / Mechanical / Chemical / Civil / Petroleum engineering. The approach to solutions and methodologies such as the selection of materials, problem analysis etc., shall be based on fundamental engineering calculations.

4. SUMMARY OF PROJECT WORK

Please refer to **Appendix I** for the schedule of the present semester.

4.1 Extended Proposal

An extended report must be submitted to the supervisor by the due date specified in **Appendix I**. The report will be graded based on the marking scheme in **Appendix II**. Prior to submission, the project proposal must be discussed with the respective supervisors to determine the scope, problems, and practicality of the proposed project. The report, which **shall not exceed 25 pages** including the appendices, shall comprise:

- details of the activities that need to be carried out
- identification of potential problems
- a few conceptual designs that have been considered necessary preliminary engineering calculations, data collection and benefit-cost analysis that have been used in deciding the final concept design.

Note: ***Supervisors need to ensure that any draft proposal is reviewed and returned promptly to ensure that students can submit their work on time.***

4.2 Development of DESIGN CONCEPT

Throughout the project, the supervisor will monitor the overall progress and development of the project through meetings and reflection forms as well as the progress report. The design concept of the project must be completed by the date specified in **Appendix I**. Upon completion, the group must arrange with the supervisor for the assessment of the design concept. The assessment will generally be based on the planning, execution and the quality of the design concept. Please refer to the format in **Appendix III** for the guidelines of the assessment.

4.3 E-Poster Presentation

Each group will be required to present their results and findings in the form of **ONE** A-0 size virtual poster (E-Poster) with a portrait-layout. The e-poster presentation provides an opportunity for students to expose or share their work, knowledge, and experience with other students and examiners. The e-poster from each group will be examined, unmanned, by one or more examiners in a session that will be advised further. **Appendix IV** provides the guidelines on the e-poster exhibition assessment criteria. The tentative time for the session is indicated in **Appendix I**. The use of more than one poster will be penalised.

Selected groups will be exhibited in the Engineering Design Exhibition (SEDEX), which is described in Section 4.5. The selection will be made based on the scores given by the examiners for the posters and the demonstration/simulation of the design concept. A further announcement on SEDEX participation shall be made by the SEDEX committee directly.

4.4 Demonstration / Simulation of Design Concept

All groups are also required to demonstrate or simulate a design concept of their project before one or more examiners (non-supervisor). A computer simulation or demonstration is preferable, however, in certain cases, any means of presenting the design concept might be acceptable depending on the nature of the project and endorsement from the ETP Coordinators. This demonstration/simulation will be assessed based on the criteria specified in **Appendix IV**.

The scores for the demonstration/simulation, together with the e-poster, will be used by the ETP Coordinators in selecting groups that will participate in the SEDEX.

4.5 Science & Engineering Design Exhibition (SEDEX)

The Science & Engineering Design Exhibition (SEDEX) is an event organized by the university towards the end of every semester. It provides opportunities for students to present their project works, mainly through the ETP and Final Year Project (FYP) courses. Only selected projects will be allowed invited to participate. For ETP, the selection will generally be made based on the score obtained by groups in the evaluations for e-posters and demonstrations.

All participants will be given certificates, and also winners will be awarded. Projects with certain outstanding quality and innovation will be selected to represent the university at national and international level competitions. It must be noted that the operational matters of the SEDEX is beyond the responsibility of ETP supervisors and coordinators. There shall also be no extra marks for groups that participate or win awards in the SEDEX. Certificates, awards and details of the SEDEX should be obtained only from the SEDEX Committee.

4.6 Video Presentation

During the demonstration session, the group shall submit a video presentation on their findings. Assessment on visual aspects, clarity of presentation, logic, knowledge of subject matter and the overall content of the presentation will be made on a group basis (**Appendix IV**). Each group member must present some portion of the materials. The examiners will be the appointed lecturers, other than the group supervisor. Below bullet should briefly explain the item that should be considered when preparing the video presentation.

1. Group to record and compile project presentation with the following sequence (but not limited to):
    a. Group Members Introduction
    b. Introduction of the project
    c. Literature/Design Thinking application
    d. Project Planning
    e. Methodology
    f. Demonstration of the Design Concept
    g. Results & Discussions
    h. Conclusion & Recommendation
2. The video should be prepared in mp4 format. The group must ensure the video upload is compatible with a typical video player.
3. The resolution of the video should not be below than 720p. Else, make sure the images are not scattered/broken and the examiner/s would not find it hard to read/see.
4. Please closely observe the formal dressing etiquette when presenting your project.
5. ALL MEMBERS must physically appear in the video, strictly following the sequence stated during the introduction part.
6. The group can edit the video to help the examiner/s understand better the project. Usage of animation/simulation is highly recommended.
7. The duration of the video should **NOT EXCEED 10 minutes**.

4.7 Final Report

Each group shall submit a final report by the due date specified in **Appendix I**. The report will be assessed using the form in **Appendix V**. In this report, the ultimate results and findings of the project shall be presented. The report shall be assessed based on:

- A critical review of current problems/solutions
- Literature review
- Development of alternatives and options
- Decision-making processes
- Final Design (engineering drawing)
- Technical/Scientific aspects/support
- Business and economic considerations
- Application/Viability of selected design
- Suggestion for the area of improvements
- Recommendations for future work

Please note that the report must be **limited to fifty (50) pages** excluding appendices, figures, and drawings.

5. COORDINATORS

The following lecturers are appointed by the Department Chair of the Mechanical Engineering Programme as the ETP Coordinators.

1. Dr Hilmi Hussin (05 368 7027, hilmi_hussin@utp.edu.my)
2. Dr Azlan Ahmad (05 368 7210, azlan.ahmad@utp.edu.my)
3. Dr Mazli Mustapha (05 368 7208, mazli.mustapha@utp.edu.my)

The responsibilities of the Coordinators can be summarised as follows:

- Managing and implementing the ETP course.
- Assigning student groups and supervisors.
- Advising supervisors on the project assessment or any other problems encountered during the project work.
- Assigning examiners and coordinate seminar presentation and poster exhibition.
- Facilitate expenditure claims.
- Compiling students' results.

6. SUPERVISORS

6.1 Supervisor 1

- Evaluating the extended proposal, report, fabrication and final report based on the **rubric** provided **on a timely** basis.
- Advising students on the preparation of their design projects, including but not limited to the technical, economical and management aspects.

- Monitoring of student's progress against Gantt chart through their weekly progress reports.
- Certifying students' expenditure claims.
- Assigning individual contributions (IC) score to student **appropriately**.

6.2 Supervisor 2 or Co-Supervisor

A Supervisor 2 may be nominated to assist in the supervision of a team. The responsibilities of the Supervisor 2 are:

- Where applicable, guiding students or providing support in any specific areas including but not limited to soft skills, language, report writing, business acumen, etc., as and when necessary within the project time frame.
- Representing Supervisor 1 in executing the tasks stipulated in Clause 6.1 under the circumstances whereby Supervisor 1 is not able to perform the task(s).

7. ANNOUNCEMENTS

All announcements regarding ETP will be made through U-Learn. Students **MUST** regularly visit these sites to keep themselves updated and informed of all important dates and announcements.

8. ATTENDANCE AND MEETINGS

Students are required to conduct meetings regularly among themselves on project implementation. Also, all groups are required to arrange weekly meetings with the supervisor. The attendance of group members will be recorded. The logbook, the attendance record as well as student active participation will be monitored to calculate for Individual Contribution (IC) (see **Section 9. EVALUATION**).

Each student must forward student reflection form individually to the supervisor during weekly meetings. The verified student reflection form shall be returned at the end of the meeting. Each student shall bring the compilation of the student reflection form to the weekly meeting.

9. EVALUATION

Students will be evaluated based on their capability in undertaking the project, producing the written report and presenting the result. The main components of the evaluation are given in **Table 1**. In general, the evaluation of the group will be carried out by supervisors (55 %), appointed examiners (40 %), and peer evaluation (5 %), with a total of 100 %. The evaluation forms for each component are given in the Appendices.

Table 1: ETP Grading Structure.

Tentative Time	Components	Assessment Contribution			Evaluation Forms
		Supervisor	Panel of Examiners	Peer Evaluation	
W 6	Extended Project Proposal	15 %			Appendix II
W 10	Evaluation of Design Concept	10 %			Appendix III
W 11	Poster Evaluation		10 %		Appendix IV
W 11	Demonstration of Design Concept		20%		Appendix IV
W 11	Group & Individual Video Presentation		10 %		Appendix IV
W 12	Final Report	15%			Appendix V
W 12	Peer Evaluation			5 %	Appendix VI
W 2 - 12	Individual Contribution *(Student Reflection & Meeting, Active Participation)*	15%			Appendix VIII
	Total	**55 %**	**40 %**	**5 %**	

The individual score for Individual Contribution (IC) described in **Section 8.** peer evaluation (**Appendix VI**) and **STUDENT'S REFLECTION** (see **Appendix VIII**) will be used to differentiate the individual score for each student in a group. Each student will also be evaluated based on prescribed criteria by other members of the team, by means of peer evaluation. Instructions on peer evaluation will be provided approximately in the last 3 weeks of the semester.

10. PLAGIARISM

Plagiarism is strictly prohibited and is a serious offence. Kindly refer to Section 5.1 of the UTP's undergraduate handbook, *A Guide to University Academic Policies and Procedures*. Any work that is found to have been copied or plagiarized will **NOT** be assessed.

11. WRITING FORMAT FOR FINAL REPORT

The writing format of the ETP final report should follow the UTP standard as described below. The report consists of many parts arranged in a certain order. It is recommended that the contents be in the following order, although not every report will include all the items listed.

a) Title
b) Acknowledgement
c) Executive Summary / Abstract
d) Table of Contents
e) Background of Project Work
f) Identification and Definition of Problem
g) Objective and Scope
h) Project Management
i) Literature Review
j) Theory
k) Procedure / Methodology
l) Engineering Analysis
m) Business / Economic Analysis
n) Discussion of Results
o) Conclusion
p) Recommendation
q) References
r) Appendices

General Writing Format

Students must follow specific guidelines for writing the report as stated below.

a) Language
The report must be written in the English Language.

b) Font and Spacing
All text should be double-spaced (Times New Roman regular font-style, size 12) written on one side of each white A4 paper. However, footnote, computer program codes (must be reduced to font size 8), and captions for tables and figures should be single-spaced.

c) Length
The report shall not be more than 30 pages, excluding the appendices. Students are encouraged to be brief and concise in their writing and avoid jargon and passive voice as much as possible.

d) Numbering
All pages must be numbered in the proper sequence from introduction to the end of the report including pages on figures, tables, computer programs and appendices. Page numbers appear by themselves and are not to be enclosed in parenthesis, hyphens or other decorative symbols. The page number must be positioned at the bottom and centred.

e) Margin
The top, bottom and right margins are 25 mm. The left margin must be 40 mm.

f) Mathematical Text

The mathematical text must be spaced out, superscript and subscript must be clearly shown as such.

g) Heading

Major headings, such as INTRODUCTION, should be in capitals. Times New Roman and font size 14 should be used. Secondary headings such as Example, the first letter should be capitalised, bold and font size 12 should be used, and tertiary heading should be in Times New Roman.

h) Tables and Figures

Tables and figures less than a page in size should be inserted into the text near the point of reference with a three-line space above and below. Tables should be continuous and not carried over to the succeeding page. Margins' limits are the same as text full-page. All tables and figures should be numbered consecutively. Tables and figures are must be within the main text. Table captions should be positioned at the top middle of each table. The captions for figures should be positioned at the bottom middle of each figure.

i) References

The method of writing references must follow the standard format. See **Appendix X** for samples of reference format.

j) Title Page

The title page should be set out in accordance with **Appendix XI** and should include the followings:

- name of the group members in FULL complete with the Matrix Number.
- title of the ETP project
- month and year in which the ETP final report is submitted

Students must submit one softcopy of their ETP final report to the respective supervisor on week 12.

General Content

This section will elaborate more about the general content needed in each part of the report format.

a) Title

The project title should reflect the focus on the core issues of the research work.

b) Acknowledgements

Acknowledgements should include the names of the contributors to the project work including the supervisors and members of the group, preferably not more than one page.

c) Summary / Abstract

The summary or abstract briefly covers the content of the work. It should contain the **(i) Objectives** of the project; i.e., state the core issue, research question or objective of the design work, **(ii) Methodology**; i.e., briefly describe the methods or techniques used in achieving the objectives, **(iii) Results**; i.e., describe the results obtained from the methodology employed, and **(iv) Conclusions**; i.e., interpretation of the results in relation to the theory or hypotheses. Draw conclusions and state the implications. The summary or abstract is presented so that any other reader, who is attracted by the title of the project, can know a little more without having to read the whole report. Any reference to the literature is not made in the abstract but if such references are necessary, they should be footnoted. The abstract should not be more than one page.

d) Table of Contents

Table of contents lists all headings and sub-headings, tables, figures, appendices, bibliography with the page numbers.

e) Background of Project Work

The background covers the research project, the definition of the problem, the achievement expected from the project, the importance of the project as well as the range and depth of the study.

f) Objective and Scope

The aim of the study includes the main/general matter that needs to be achieved or implemented. Objectives are more detailed and closely related to the aim. The scope is the boundary for the research work planned by the students to ensure the feasibility of the project to be carried out within the given time frame.

g) Project Management

Project management should focus on progress monitoring and task allocation with the usage of the Gantt chart.

h) Literature Review

The literature review includes a review of written materials on the topic and area chosen. It gives the background of the current studies of the problem area chosen from various written sources of references. This section reviews the previous research analytically, critically and objectively.

i) Theory, Methodology and Procedure

This section shall contain all the relevant theories, hypotheses, facts and data obtained from references and literature reviews. The theories included must be relevant to the objectives and the findings of the project, thus allowing the comparison between the results achieved and the theory to be outstanding. The methodology must be relevant and used in the project.

j) Engineering Analysis

This section should include data gathering, data analysis, tools required, possible solutions to problems, decision making on the selected solution and project benefits.

k) Discussion on Result and Findings

This section presents the finding or outcome of the research work. It is suggested that the results obtained be presented clearly in the form of tables and figures such as graphs, diagrams or others.

l) Conclusions

The conclusion highlights whether the work completed complies with the set objective and the significance of the findings. Recommendation for future work should be stated in this section to ensure the set objective can be achieved and improved or even expanded.

m) References

This section is to record all references used for preparing the proposed project. Use the standard format as given in the appendix.

n) Appendices

Lengthy calculations, figures, raw data, computer programs/source codes, outputs, etc. are to be enclosed as appendices. They should be titled and numbered according to chronological order. Each appendix is preferably named using capital letters and the appendices need to be listed down in the Table of Contents.

APPENDIX I: IMPORTANT DATES

ETP MILESTONES

ACTIVITIES/WEEK	1	2	3	4	5	6	7	8	9	10	11	12
Seminar I (ETP Briefing)	●											
Seminar II (Design Thinking)		●										
Seminar III (High Impact Presentation)			●									
Extended Project proposal due						●						
Evaluation on Design Concept										●		
Pre-SEDEX – Online submission due										●		
Pre-SEDEX – Examiner evaluation											●	●
Submission of Peer Evaluation Form												●
Submission of Final Report												●

SEMINARS

Seminar	Topic	Presenter
Seminar I	Introduction to ETP	ETP Coordinators
Seminar II	Design Thinking	Dr. Hilmi Hussin
Seminar III	Presenting Design Concept	ETP Coordinators

Note: The above schedule is subjected to change. Please check messages in the ULearn regularly for updates.

APPENDIX II **FORM E1**

EXTENDED PROPOSAL SCORE SHEET

MEB 2063 – ENGINEERING TEAM PROJECT

Group No		**Group Member Names**	**ID**
Supervisor		1.	
Title		2.	
		3.	
		4.	
		5.	
		6.	

No	**Item**	**Guidelines for Marking**	**Marks Allocated**	**Marks**
1	Introduction	✓ Project background and problem statement ✓ Project objectives	15	
2	Design Thinking	✓ Literature review / Seeking for Inspiration ✓ Apply Design Thinking Tools (Interview/Survey/Expert consultation/Immersion/Analogous inspiration)	30	
3	Designing	✓ Alternative design concepts ✓ Justification in choosing the design	10	
4	Project management planning	✓ Task listing and distribution ✓ Gantt Chart (activities & milestones) ✓ Feasibility of plan	15	
5	Methodology	✓ Project/work flow ✓ Identification of suitable tools or software ✓ Justification of fabrication choices	20	
6	Economical / business consideration	✓ Capital cost considerations ✓ Operational cost considerations ✓ Alternatives in materials	5	
7	Conclusion	✓ Summary of progress and findings ✓ Next plan of action	5	
		TOTAL	100	
Weightage in course: 15%				/15

_____

Supervisor's signature

Date: _____

Note: Supervisors shall forward the completed form (scanned copy) to ETP Coordinator by the deadline given.

APPENDIX III **FORM E2**

EVALUATION OF DESIGN CONCEPT SCORE SHEET
MEB 2063 – ENGINEERING TEAM PROJECT

Group No			
Title			
Group Leader		**ID**	

No.	Component*	4	3	2	1	Marks
1	**Understanding of scientific principles underlying the product**	ALL members have a clear and accurate understanding	Most members have a clear and accurate understanding	Most members have a relatively accurate understanding	Most members DID NOT understand	
2	**Drawings**	Very neat Clear dimensioning. Major components labelled.	Neat. Clear dimensioning. Some components labelled.	Quite neat. Clear dimensioning. Some components labelled.	No dimensioning. Poor labelling.	
3	**Materials Selection**	Appropriate materials were carefully selected based on scientific facts.	Materials were selected based on scientific facts.	Materials were partly selected based on scientific facts.	Inappropriate materials were selected.	
4	**The design considers and complies with HSE**	Fully compliance with no risk & potential hazard (i.e. explosive, chemical, sharp edges. Etc.)	Average compliance with minimal risk and hazard	Minor compliance with some risk and hazard	None compliance	
5	**Design Process**	Design fully as per the construction drawing.	Design mostly as per the construction drawing.	Slightly design as per the construction drawing.	Not designed as per the construction drawing.	
6	**Validation on the model**	Clear evidence on feedback from end-user.	Sufficient evidence on feedback from end-user.	Some evidence on feedback from end-user.	No evidence on feedback from end-user.	
7	**IR4.0 tools**	>70% implementation in the design process and function.	< 70% implementation in the design process and function	<50% implementation in the design process and function	<10% implementation in the design process and function	
8	**Finishing Quality**	Excellent design	Neat design	Proper design	Poor design	
9	**Functionality and Robustness of Design**	Functions extraordinarily well. Excellently structure.	Functions well. Satisfactorily structure	Functions pretty well, but with minor defects. Marginally stable structure	Major flaws in function. Unstable structure.	
10	**Animation and simulation**	Highly creative and clearly presented.	Creative and clearly presented.	Creative but not clearly presented.	Less creative	
					Total (Max = 40)	
					Weightage: 10%	/10

*Supervisor may award 0 marks for any component/s that is not present in the project.

_____
Supervisor's signature

Date: _____
Note: Supervisors shall forward the completed form (scanned copy) to ETP Coordinator by the deadline given.

APPENDIX IV **FORM E4**

PreSEDEX SCORE SHEET
MEB 2063 – ENGINEERING TEAM PROJECT

INDIVIDUAL PRESENTATION ASSESSMENT *(5%)*			**Developing (1-2)**	**Effective (3)**	**Distinctive (4-5)**	
Fill in the information according to the presenter sequence						
#	Name	ID				
1						Examiner to assess group members and give an overall score in term of: • Attire • Subject knowledge • Communication • Body language • Task execution
2						
3						
4						
5						
6						

ORAL PRESENTATION GROUP ASSESSMENT *(15%)*

No.	Component	Developing (1-2)	Operative (3)	Distinctive (4-5)	Marks
1	**Introduction**	Very vague	Clear	Very clear	
2	**Literature/ Design Thinking application**	Poor	Adequate	Highly adequate and relevant	
3	**Project Planning**	Poor scheduling, planning and flow. Improper task distribution	Average planning, scheduling and flow. Proper task distribution	Good planning, scheduling and flow. Good task distribution	
4	**Methodology**	Poor design selection. Minimal engineering analysis	Questionable design selection Adequate engineering analysis	Justified design selection Adequate engineering analysis	
5	**Results & Discussions**	Irrelevant discussions.	Reasonable discussions on results	Good discussions on results. Business/Economic considerations	
6	**Conclusion & Recommendation**	Highly dubious	Convincing	Highly convincing	
				Total (Max = 30)	

POSTER ASSESSMENT *(10%)*

No.	Component	Developing (1-2)	Operative (3)	Distinctive (4-5)	Marks
1	**Clarity of Images**	Many images are not clear or are too small.	Most images are in focus.	All images are in focus.	
2	**Creativity of Graphics**	No graphics made by the student are included.	One or two of the graphics used reflect student creativity.	The graphics used reflect an exceptional degree of student creativity.	
3	**Relevance of Graphics**	All graphics not relevant. Most borrowed graphics without a source citation.	Most graphics are relevant. All borrowed graphics have a source citation.	All graphics are relevant. All borrowed graphics have a source citation.	
4	**Overall Composition**	Messy and distracting	Creatively composed.	Creatively composed. A suitable choice of colours.	
				Total (Max = 20)	

DEMONSTRATION OF THE DESIGN CONCEPT *(20%)*

No.	Component	Developing (1-4)	Operative (5-7)	Distinctive (8-10)	Marks
1	**Creativity of Idea**	Repeating ideas and existing procedures with little team input into the ideas behind the project	The practical idea that can bring benefits to society	The excellent new and practical idea that can bring extreme benefits to society	
2	**Innovation**	The work is purely number crunching, with little associated novelty	The work is applied research, looking at the simple improvement of an existing concept or design	The work tackles a new methodology to achieve the same function and could lead to a new avenue of research	
3	**Model Aesthetics**	Poor overall look and colour of the design.	The proper colour was chosen.	Attractive colour and overall look of the design.	
4	**Demonstration Creativeness**	Poor animation or simulation to demonstrate the idea.	Proper animation or simulation to demonstrate the idea.	Excellently animation or simulation to demonstrate the idea.	
5	**Functionality/ Ability to achieve the desired task**	Major flaws in function.	Functions pretty-well with minor defects	Functions extraordinarily well.	
				Total (Max = 50)	

Please **TICK** the followings:

	Low	Medium	High
Potential for commercialization (Market Ready)			
Suitability for exhibition			

Remarks:

_____

_____

_____

_____

Examiner's name **Signature** **Date**

For committee use

	1	2	3	4	5	6	Oral (30)	Poster (20)	Demonstration (50)
Examiner 1									
Examiner 2									
Average									

APPENDIX V **FORM E5**

FINAL REPORT EVALUATION
MEB 2063 – ENGINEERING TEAM PROJECT

Group No		**Name**	**ID**
Supervisor		1.	
Title		2.	
		3.	
		4.	
		5.	
		6.	

No	**Item**	**Guidelines for Marking**	**Marks Allocated**	**Marks**
1	Report Format	- Summary - Table of contents - Appendices (compilation of relevant information)	10	
2	Introduction	- Background of project /problem statement - Objective - Literature review	10	
3	Procedure and analysis	- Application of Design Thinking - Approach to solutions/methodology - Fundamental engineering analysis	30	
4	Results	- Technical specification and engineering drawing - Project output - Discussion on result - Conclusion - Recommendations	40	
5	Project management	- Progress monitoring (Gantt Chart) - Task allocation	10	
		TOTAL	100	
				/ 15

_____
Supervisor's signature

Date: _____
Note: Supervisors shall forward the completed form (scanned copy) to ETP Coordinator by the deadline given

APPENDIX VI **FORM E6**

PEER EVALUATION

MEB 2063 – ENGINEERING TEAM PROJECT

Name: _____ **ID:** _____ **Group:** _____

Item	**Score**			**Group member names**				
	1	**3**	**5**					
Contributions	Rarely provides useful ideas when participating in group work and discussion. May refuse to participate.	Usually provides useful ideas when participating in the group work and discussion. A strong group member who tries hard!	Routinely provides useful ideas when participating in the group work and discussion. A definite leader or member who contributes a lot of effort.					
Quality of Work	Provides work that usually needs to be checked/redone by others to ensure quality.	Provides high quality work.	Provides work of the highest quality.					
Time-management	Rarely gets things done by the deadlines AND group must adjust deadlines or work responsibilities because of this person's inadequate time management.	Usually uses time well throughout the project but may have procrastinated on one thing. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.	Routinely uses time well throughout the project to ensure things get done on time. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.					
Problem-solving	Does not try to solve problems or help others solve problems. Let others do the work.	Refines solutions suggested by others.	Actively looks for and suggests solutions to problems.					
Attitude	Often has a negative attitude about the task(s). Often is publicly critical of the project or the work of other members of the group.	Often has a positive attitude about the task(s). Rarely is publicly critical of the project or the work of others.	Always has a positive attitude about the task(s). Never is publicly critical of the project or the work of others.					
Reliability	Rarely focuses on the task and what needs to be done. Let others do the work.	Focuses on the task and what needs to be done most of the time. Other group members can count on this person.	Consistently stays focused on the task and what needs to be done. Very self-directed.					
TOTAL								

Adapted from: http://coe.nevada.edu/slefevre/grouprubric.html

APPENDIX VII **FORM E7**

STUDENT REFLECTION FORM
MEB 2063 – ENGINEERING TEAM PROJECT

Title		**Group No.**	**Week**
Supervisor name			
Student name			
Student ID			

Reflective Thinking: The reflection explains the student's thinking and learning processes, as well as implications for future learning.
Analysis: The reflection is an in-depth analysis of the learning experience, the value of the derived learning to self or others, and the enhancement of the student's appreciation for the discipline.
Making Connections: The reflection articulates multiple connections between this learning experience and content from other courses, past learning, life experiences and/or future goals.

Please refer to the Gibbs' Reflective Cycle

Description *(What happened?)*

Feelings *(What were you thinking and feeling?)*

Evaluation *(What was good and bad about the experience?)*

Analysis *(What sense can you make of the situation?)*

Conclusions *(What could you have done differently?)*

Action Plan *(How will you approach a similar situation in the future?)*

1) Maximum 2 pages only
2) Supervisor needs to verify each student's reflection during the weekly meeting.

_____
Supervisor's signature

Date: _____
Note: Supervisors should retain the forms for two consecutive years.

APPENDIX VIII: INDIVIDUAL CONTRIBUTIONS – *For supervisor use only*		FORM E8
MEB2063 – ENGINEERING TEAM PROJECT MAY 2020 SEMESTER		
Title		**Group No.**
Supervisor name		
Student name		
Student ID		

RUBRIC FOR STUDENT REFLECTIONS

Developing (1-2)	**Operative (3-4)**	**Distinctive (5)**	**WEEK**										
			2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
The reflection is very vague and unclear about the personal learning process and the train of thoughts.	The reflection explains the student's thinking about his/her learning processes	The reflection explains the student's thinking and learning processes, as well as implications for future learning.											
The reflection barely analysis the learning experience.	The reflection is an analysis of the learning experience and the value of the derived learning to self or others.	The reflection is an in-depth analysis of the learning experience, the value of the derived learning to self or others, and the enhancement of the student's appreciation for the discipline.											
The reflection barely connects to other learning or experiences.	The reflection articulates connections between this learning experience and content from other courses, past learning experiences, and/or future goals.	The reflection articulates multiple connections between this learning experience and content from other courses, past learning, life experiences and/or future goals.											
TOTAL (Max = 15 per week)													
Meeting & Participation marking guidelines (MP)													

Criteria	**Score**
Come on time & active	4.5-5
Come on time & less active	3.0-4.0
Late & active	2.0-3.0
Late & less active	1.0-2.0
Absent (w/o reason)	0

_____
Supervisor's signature
Date:

Note: Supervisors should forward the completed form (copy) to ETP Coordinator by the deadline given.

APPENDIX IX

EXTENDED PROJECT PROPOSAL CONTENT
MEB 2063 – ENGINEERING TEAM PROJECT

The project proposal must have the followings at minimum:

Details of the Project Team (front page)

Group Number Project: Matric Number Team Leader Member Member … Approved for submission: (signature) Group Supervisor Name, Date

Short Summary/Abstract

Problem Statement

Project Objectives

Background Study

Design Approach/Methodology
- Procedures
- Plan and Schematic Flow Process of the Project
- Hardware/Tools and Software

Project Management
- Task Allocation and Activities
- Schedule/Gantt Chart

APPENDIX X

SAMPLE OF REFERENCING FORMAT

MEB 2063 – ENGINEERING TEAM PROJECT

The format of references for the respective sources is as follows:

1. journal refer to Meguid and Zhu (1995)
2. book refer to Glister P. (1993)
3. book in series refer to Ochoa, O.O and Reddy, J.N. (1989)
4. article in book/conference proceedings refer to Eskey, D and Grabe, W. (1988)
5. thesis refer to Mohd Shariff, A. (1995)
6. interview refer to Hamouda, A.M.S. (1994)
7. website refer to Duncan, Donna. (1998)

Meguid, S.A. and Zhu, Z.H., 1995, "A novel finite element for treating inhomogeneous solids," *International Journal Numerical Methods Eng*ineering **38 (2):** 1579-1592

Glister P. 1993, *The Internet Navigator,* New York, John Wiley & Sons

Eskey, D and Grabe, W. 1988, "Interactive models for second language reading" in

P. Carrell, J. Devine and D. Eskey (Eds) *Interactive approaches to Second Language Reading* , Cambridge; Cambridge University Press

Hitam, P., 1995, *Fundamental Study of X-111 Soil Characteristics*, Ph.D. Thesis, Universiti Teknologi PETRONAS, Malaysia.

Hamouda, A.M.S. 1994. LUSAS Ltd., UK, Private communication.

Websites (with author):

Author, Year, *Title*, Date accessed, from URL

Duncan, D. M., 2008, *How to Eat Humble Pie*, 6 Sept 2009, from http://www.geovillage.com

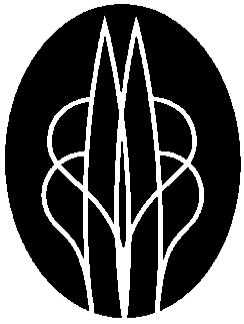
Websites (without author):

Title, Year, Date accessed, from URL

APPENDIX XI

SAMPLE OF COVER PAGE FOR FINAL REPORT
MEB 2063 – ENGINEERING TEAM PROJECT

ENGINEERING TEAM PROJECT



UNIVERSITI
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PETRONAS

TITLE OF PROJECT

BY

GROUP NUMBER

Member 1 (Matric Number)
Member 2 (Matric Number)
Member 3 (Matric Number)
Member 4 (Matric Number)
Member 5 (Matric Number)
Member 6 (Matric Number)

Supervisor:

Dr Hilmi Hussin

May 2020

Universiti Teknologi Petronas
32610 Seri Iskandar
Perak Darul Ridzuan


STAY HOME
STAY SAFE