

Rubric for FYP Proposal (PPKEE, Academic Session 2020/2021)

PO10 : Written Communications (CO3)

Marks		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Clarity and presentation of proposal	Organization	The proposal is not organized at all	Proposal lacks on overall organization. Reader has to make considerable effort to understand the underlying logic and flow of ideas.	Proposal is organized via topic/flow, but in some areas it is difficult to follow the flow of ideas.	Proposal is organized and clearly written for the most part. In some areas, the logic or flow of ideas is difficult to follow.	Proposal is well organized and clearly written. The underlying logic is clearly articulated and easy to follow.	
	Writing Style	A lot of problems with word choices and sentence structure.	Occasional problems with word choices and sentence structure, leaving the reader unsure the meanings.	Words and sentence are adequate in general but lack energy. Reader has struggle to keep reading to the end.	Good writing style; sentences flow smoothly and evenly.	Compelling writing style; connects strongly with the reader and keeps him or her engaged right to the end.	
	Spelling and Grammar	A lot of spelling errors or A lot of grammatical errors.	Frequent spelling errors and serious grammatical errors.	Few grammatical and spelling errors.	No spelling errors and few grammatical errors.	No spelling and grammatical errors.	

Content	Introduction and Objectives	No discussion on the motivation of the project or Problem statement and objectives are not related at all or No objective.	Motivation of the project is not clear. No discussion on problem of previously proposed project/research. Relation between problem statement and objectives is not clear. Objectives are not clear and cannot be measured.	Motivation of the project is somewhat clear without related supporting references. No discussion on problem of previously proposed project/research. Relation between problem statement and objectives is not clear. Objectives are well defined and can be measured.	Motivation of the project is clear but lack of supporting references. Problem of previously proposed project/research are discussed but lack of supporting references. Relation between problem statement and objectives is clear. Objectives are well defined and can be measured.	Motivation of the project is clear and strongly supported by related references. Problem of previously proposed project/research are discussed and strongly supported by related references. Relation between problem statement and objectives is clear. Objectives are well defined and can be measured	
	Methodology/Experimental Setup, Gantt Chart and Milestones	No methodology or Methodology and objectives are not related at all or No relation between milestones and methodology.	Methodology is not clear. No clear description on the relation between methodology and objectives. Relation between milestones and methodology is not clear.	Shallow explanation of methodology. Methodology is clear but lack of justification. The relation between methodology and objectives is not clearly described. Gantt chart and milestones are well defined but relation with methodology is not clear.	Shallow explanation of methodology. Methodology is clear but lack of justification. The relation between methodology and objectives is clearly described. Gantt chart and milestones are well defined and have clear relation with methodology.	Details explanation of methodology. Methodology is clearly described and supported by justification. The relation between methodology and objectives is clearly described. Gantt chart and milestones are well defined and have clear relation with methodology.	

PO12 : Lifelong learning (CO4)

Initiative	Topic has not been explored at all.	Explores topic only at surface level. Providing little insight beyond basic facts. Indicating low subject interest.	Explores topic with moderate depth, yielding multiple insights. Lacks clear comprehension of topic.	Explores topic with depth of interest. Reveals significant insights of knowledge/information. But lacks of complete comprehension of subject.	Explores topic with depth of interest. Reveals significant insights of knowledge/information. Demonstrates strong comprehension of subject.	
Application	Do not make any reference to the previously gained knowledge.	Makes reference to previously gained knowledge but does not apply to problem solving.	Makes reference to previously gained knowledge and demonstrates limited capacity to utilize in problem solving.	Makes details reference to previously gained knowledge and demonstrates strong application to problem solving.	Makes details reference to previously gained knowledge and demonstrates strong application to problem solving in creative manner.	

References :

- 1) Teaching Assessment Rubric: Lifelong Learning. Department of Nutrition and Food Science, Texas A&M University
- 2) A Guide to Final Year Project Assessment for Staff and Students : City University of Hong Kong
- 3) <http://web.cse.ohio-state.edu/~neelam/abet/DIRASSMNT/writingLifelongLearningRubric.htm>

Rubric for FYP Progress Report (PPKEE, Academic Session 2020/2021)

PO4 : Investigation (CO1)

Marks		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Ability to define the problem (Chapter : Introduction)	Background	No background	Inappropriate or irrelevant sources are reviewed.	Appropriate and relevant sources are reviewed. However, the significance and also the motivation of the project have not precisely been described. The discussion is not narrow down from general to the specific topic related to the project.	Appropriate and relevant sources are reviewed. In addition, the significance and also the motivation of the project have precisely been described. The discussion is narrow down from general to the specific topic related to the project.	Appropriate and relevant latest (last 2,3 years) sources are reviewed. In addition, the significance and also the motivation of the project have precisely been described. The discussion is narrow down from general to the specific topic related to the project. Most of the cited references are from the last 2 or 3 years.	
	Problem Statement	No problem statement	State only generic problem or No discussion on the limitation of previous works or No reference	Limitation of at least two previous works related to the project is discussed. However, that limitation is not the focus of the project and not being addressed in the objectives. Have at least two references.	Limitation of at least two previous works related to the project is discussed. That limitation is the focus of the project and is going to be addressed in the objectives. Have at least two references	Limitation of at least three latest (last 2,3 years) previous works related to the project is discussed. That limitation is the focus of the project and is going to be addressed in the objectives. Have at least three references.	
	Objectives	No objective	Objectives are not clear.	Objectives are clear but cannot be measured. Moreover, the objectives do not explicitly address the limitation of previous works stated in the problem statement.	Objectives are clear and can be measured. In addition, the objectives explicitly address the limitation of previous works stated in the problem statement.	Objectives are clear and can be measured. In addition, the objectives explicitly address the limitation of previous works stated in the problem statement. Moreover, the considered limitation has not been addressed before by previous researchers.	
Ability to analyze previous works (Chapter : Literature Review)	Sources of previous works	Cite Wikipedia	No wikipedia and majority of references are not from journal papers or conference proceedings	No Wikipedia and majority of references are from journal papers or conference proceedings. However, some of the key references are missing, or some of irrelevant references are cited.	No Wikipedia and majority of references are from journal papers or conference proceedings. All key references are cited without any irrelevant references.	No Wikipedia and majority of references are from journal papers or conference proceedings. All key references are cited without any irrelevant references. Contains a large number of latest publications (last 3 years) as references.	
	Review of previous works	No review of previous works	Just a descriptive list of published documents without critically been reviewed or no review on an important theoretical concepts to understand the project.	Important theoretical concepts to understand the project is reviewed. In addition, related previous works have critically been reviewed. However, the review is not in-depth especially for the previous works directly related to the project as stated in the problem statement.	A complete and concise review of theoretical concepts to understand the project. In addition, contains a concise and in-depth critical review of previous works for a deeper understanding of limitations discussed in the problem statement.	A complete and concise review of theoretical concepts to understand the project. In addition, contains a concise and in-depth critical review of the latest (last of 2, 3 years) previous works for a deeper understanding of limitations discussed in the problem statement. Moreover, establishes a clear gap makes a convincing case for the significance of the project.	
Ability to devise methodology to solve the problem (Chapter : Methodology)	Overall Flow	No methodology	Weak or wrong description of methodology or The described methodology is not convincing enough to achieve the stated objectives.	Description of the methodology is sufficient details and convincing enough to achieve the stated objectives. However, the justification for the methods chosen or the design decisions made is not clear.	Description of the methodology is sufficient details and convincing enough to achieve the stated objectives. In addition, the justification for the methods chosen or the design decisions made is clear. However, no discussions on the limitation of the chosen method or the design decisions made and their impact on the results.	Description of the methodology is sufficient details and convincing enough to achieve the stated objectives. In addition, the justification for the methods chosen or the design decisions made is clear. Furthermore, the limitations of the chosen method or the design decisions made and their impact on the results are discussed.	
	Experiment procedure	No experiment procedure	Weak or no description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not	A clear description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not. However, the justification of the chosen procedures is not clear and not supported by valid references	Clear and concise description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not. In addition, the justification of the chosen procedures is clear and supported by valid references. However, no comparison with previous works as discussed in the problem statement.	Comprehensive and concise description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not. In addition, the justification of the chosen procedures is clear and supported by valid references. Furthermore, there is a comparison with previous works as discussed in the problem statement.	

PO6 : Engineer and Society (CO2)

Marks		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Ability to address social design criteria		Following items are not discuss at all:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	One of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	Two of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	Three of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	Four of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	

PO10 : Written Communications (CO3)

Marks		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Clarity and presentation of progress report	Organization	The progress report is not organized at all.	Progress report lacks on overall organization. Reader has to make considerable effort to understand the underlying logic and flow of ideas.	Progress report is organized via topic/flow, but in some areas it is difficult to follow the flow of ideas.	Progress report is organized and clearly written for the most part. In some areas, the logic or flow of ideas is difficult to follow.	Progress report is well organized and clearly written. The underlying logic is clearly articulated and easy to follow.	
	Writing Style	A lot of problems with word choices and sentence structure.	Occasional problems with word choices and sentence structure, leaving the reader unsure the meanings.	Words and sentence are adequate in general but lack energy. Reader has struggle to keep reading to the end.	Good writing style; sentences flow smoothly and evenly.	Compelling writing style; connects strongly with the reader and keeps him or her engaged right to the end.	
	Spelling and Grammar	A lot of spelling errors or A lot of grammatical errors.	Frequent spelling errors and serious grammatical errors.	Few grammatical and spelling errors.	No spelling errors and few grammatical errors.	No spelling and grammatical errors.	

References :

- 1) AC 2012-4488: EVOLVING A RUBRIC FOR USE IN ASSESSING ENGINEERING GRADUATE ATTRIBUTES IN A STUDENT SENIOR RESEARCH THESIS by A. Chong and L. Romkey, University of Toronto
- 2) A Guide to Final Year Project Assessment for Staff and Students : City University of Hong Kong
- 3) 2016 PPKEE Capstone Rubric

Rubric for FYP Progress Presentation (PPKEE, Academic Session 2020/2021) - Revised

PO11 : Project Management (CO4)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Ability to plan and manage engineering activities to be within time constraint.	Initiating the project	No project objective	Project objectives are not clear.	Project objectives are clear but cannot be measured.	Project objectives are clear and can be measured.	Project objectives are clear and can be measured. In addition, the stated objectives are new and have not been addressed before by previous researchers.	
	Planning the project	Did not identify resources needed for the project or No schedule on project activities	Some resources to complete the project have been identified. However only less than half of the specific activities/tasks required to complete the project have been identified.	Some resources to complete the project have been identified. In addition, more than half of the activities required to complete the project have been identified. However, the schedule omitted significant activities/tasks	Most resources to complete the project have been identified. Moreover, almost all activities to complete the project have been identified. Furthermore, a comprehensive schedule has been developed but with unrealistic due dates.	All resources to complete the project have been identified. Besides, all activities to complete the project have been identified. Furthermore, a comprehensive schedule with realistic due dates has been developed.	
	Executing the project	Did not achieve any milestones yet	Only less than half of the milestones targetted until the time of presentation have been achieved.	Half of the milestones targetted until the time of presentation have been achieved.	Most of the milestones targetted until the time of presentation have been achieved	All milestones targetted until the time of presentation have been achieved.	
	Monitoring and Controlling the project	Did not identify or correct problems encountered during project execution	Identified most problems encountered during project execution but did not correct them.	Identified and corrected most problems encountered during project execution.	Identified and corrected all problems encountered during project execution.	Identified and corrected all problems encountered during project execution with innovative way.	

PO10 : Oral Communications (CO3)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Communication skills for progress presentation	Organization and Articulation	The presentation is not organized at all.	Presentation rambles. Not organized where key ideas are difficult to identify. No clear introduction, supporting details and summary.	The presentation has some structure. Key ideas are identifiable. Introduction, supporting details and summary are too broad or too detailed.	The presentation has a clear structure and is easy to follow. Key ideas are clearly and concisely articulated. There are sufficient details on introduction, supporting information and summary.	Presentation logically and skillfully structured. Key ideas are compelling, and articulated with exceptional clarity and concision. Introduction, supporting details and summary are clearly evident and memorable.	
	Non-verbal delivery	Have one or more following items during the presentation:- 1) Hard to understand or hear 2) Uses aids excessively or not at all 3) Reads from paper 4) Speaker appears uncomfortable	Have one or more following items during the presentation:- 1) At times difficult to hear or understand 2) Overuse or underuse aids 3) Reads from paper 4) Speaker appears uncomfortable	Have one or more following items during the presentation:- 1) At times difficult to hear or understand 2) Overuse or underuse aids 3) At times presentation seems memorized 4) Speaker appears tentative	Have all of following items during the presentation :- 1) Can be heard easily 2) Speaks comfortably with some aids 3) Explanation extended beyond slides 4) Speaker appears comfortable	Have all of following items during the presentation :- 1) Can be clearly heard 2) Speaks confidently with few aids 3) Explanation extended beyond slides 4) Speaker is polished	
	Visual Aids	Slides are very poorly designed with all of following issues:- 1) Difficult to read 2) Poor level of detail 3) Missing captions or labels 4) Misspelled words	Slides are poorly designed with at least one of following issues :- 1) Difficult to read 2) Poor level of detail 3) Missing captions or labels 4) Misspelled words. The slides looks unprofessional.	Slides are somewhat well designed, used and integrated into the presentation. The slides looks somewhat professional.	Slides are well designed, used and integrated into the presentation. The slides look professional.	Slides are skillfully or creatively designed, skillfully used and seamlessly integrated into the presentation. The slides look polished and professional.	
	Question and Answer	Have one or more following items during question and answer:- 1) Do not understands most of the questions 2) Unable to answer most of the questions	Have one or more following items during question and answer:- 1) Not actively listen to questions 2) Do not provide knowledgeable answers 3) Unable to answer questions succinctly	Have one or more following items during question and answer:- 1) Understands most knowledgeably 3) Answers questions somewhat succinctly	Listens to questions carefully and responds courteously, knowledgeably and clearly to questions.	Skillfully manages and responds to questions and also gauges questioners' understanding.	
	Time Management	Do not come in time for the presentation	Presentation is unsuitably short or unreasonably long.	Presentation does not quite fit within the time constraint and the presenter has to rush or slow down at the end.	Presentation fits within the time constraint, though presenter might have to subtly rush or slow down.	Presentation fits perfectly within time constraint.	

References :

- 1) Graduate Attribute Rubrics : Faculty of Engineering, University of Manitoba

Rubric for FYP Final Report (PPKEE, Academic Session 2020/2021)

PO4 : Investigation (CO1)

		Marks					Given mark
		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	
Ability to define the problem (Chapter : Introduction)	Background	No background	Inappropriate or irrelevant sources are reviewed.	Appropriate and relevant sources are reviewed. However, the significance and also the motivation of the project have not precisely been described. The discussion is not narrow down from general to the specific topic related to the project.	Appropriate and relevant sources are reviewed. In addition, the significance and also the motivation of the project have precisely been described. The discussion is narrow down from general to the specific topic related to the project.	Appropriate and relevant latest (last 2,3 years) sources are reviewed. In addition, the significance and also the motivation of the project have precisely been described. The discussion is narrow down from general to the specific topic related to the project. Most of the cited references are from the last 2 or 3 years.	
	Problem Statement	No problem statement	State only generic problem or No discussion on the limitation of previous works or No reference	Limitation of at least two previous works related to the project is discussed. However, that limitation is not the focus of the project and not being addressed in the objectives. Have at least two references.	Limitation of at least two previous works related to the project is discussed. That limitation is the focus of the project and is going to be addressed in the objectives. Have at least two references	Limitation of at least three latest (last 2,3 years) previous works related to the project is discussed. That limitation is the focus of the project and is going to be addressed in the objectives. Have at least three references.	
	Objectives	No objective	Objectives are not clear.	Objectives are clear but cannot be measured. Moreover, the objectives do not explicitly address the limitation of previous works stated in the problem statement.	Objectives are clear and can be measured. In addition, the objectives explicitly address the limitation of previous works stated in the problem statement.	Objectives are clear and can be measured. In addition, the objectives explicitly address the limitation of previous works stated in the problem statement. Moreover, the considered limitation has not been addressed before by previous researchers.	
Ability to analyze previous works (Chapter : Literature Review)	Sources of previous works	Cite Wikipedia	No wikipedia and majority of references are not from journal papers or conference proceedings	No Wikipedia and majority of references are from journal papers or conference proceedings. However, some of the key references are missing, or some of irrelevant references are cited.	No Wikipedia and majority of references are from journal papers or conference proceedings. All key references are cited without any irrelevant references.	No Wikipedia and majority of references are from journal papers or conference proceedings. All key references are cited without any irrelevant references. Contains a large number of latest publications (last 3 years) as references.	
	Review of previous works	No review of previous works	Just a descriptive list of published documents without critically been reviewed or no review on an important theoretical concepts to understand the project.	Important theoretical concepts to understand the project is reviewed. In addition, related previous works have critically been reviewed. However, the review is not in-depth especially for the previous works directly related to the project as stated in the problem statement.	A complete and concise review of theoretical concepts to understand the project. In addition, contains a concise and in-depth critical review of previous works for a deeper understanding of limitations discussed in the problem statement.	A complete and concise review of theoretical concepts to understand the project. In addition, contains a concise and in-depth critical review of the latest (last of 2, 3 years) previous works for a deeper understanding of limitations discussed in the problem statement. Moreover, establishes a clear gap makes a convincing case for the significance of the project.	

Ability to devise methodology to solve the problem (Chapter : Methodology)	Overall Flow	No methodology	Weak or wrong description of methodology or The described methodology is not convincing enough to achieve the stated objectives.	Description of the methodology is sufficient details and convincing enough to achieve the stated objectives. However, the justification for the methods chosen or the design decisions made is not clear.	Description of the methodology is sufficient details and convincing enough to achieve the stated objectives. In addition, the justification for the methods chosen or the design decisions made is clear. However, no discussions on the limitation of the chosen method or the design decisions made and their impact on the results.	Description of the methodology is sufficient details and convincing enough to achieve the stated objectives. In addition, the justification for the methods chosen or the design decisions made is clear. Furthermore, the limitations of the chosen method or the design decisions made and their impact on the results are discussed.	
	Experiment procedure	No experiment procedure	Weak description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not	A clear description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not. However, the justification of the chosen procedures is not clear and not supported by valid references	Clear and concise description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not. In addition, the justification of the chosen procedures is clear and supported by valid references. However, no comparison with previous works as discussed in the problem statement.	Comprehensive and concise description of experimental procedures to obtain the results that can provide judgment whether the stated objectives are achieved or not. In addition, the justification of the chosen procedures is clear and supported by valid references. Furthermore, there is a comparison with previous works as discussed in the problem statement.	
Ability to interpret and discusses results and then draw valid conclusions (Chapter : Results & Discussions and Conclusions)	Results presentation and interpretation	No results	Results are not displayed in organized or appropriate manner or Engages with results only superficially without explanation of significance or The relationship between the results and the stated objectives are not clear	Most of the results are displayed in an organized manner with appropriate figures, tables and graphs. In addition, engages with and provides explanation for most results. Moreover, the relationship between the results and the stated objectives are clear. However, there is no comparison with previous works and also no critical analysis of the obtained results	All results are displayed in an organized manner with appropriate figures, tables and graphs. In addition, engages with and explains key results intelligently. Moreover, the relationship between the results and the stated objectives are clear. Furthermore, the results are compared with at least one of the previous works stated in problem statements. However, no critical analysis was made.	All results are displayed in an organized manner with appropriate figures, tables and graphs that help highlights key results and findings. In addition, employs and explain results clearly in the context of research claims made. Moreover, the relationship between the results and the stated objectives are clear. Furthermore, the results are compared with at least two of the previous works stated in problem statements and critical analysis was made.	
	Discussions	No discussion at all	Fails to discuss key findings or No weaknesses/limitations are discussed	There are discussions on the key findings. However, no weaknesses/limitations are discussed.	Key findings and also weaknesses/limitations are discussed clearly. However, no discussion was made to relate the key findings to one of the previous works.	Technically sound discussion on the key findings and weaknesses/limitations were made with outstanding justification and reasoning. In addition, discussion on the relation between the key findings and previous works also been made	
	Conclusion and Future works	No conclusion	Fails to provide clear conclusion for the stated objectives or No recommendation was made for the future works	Conclusion for the stated objectives was clearly discussed based on the obtained results together with the suggestion for the future works. However, the suggestion for the future works do not address the weaknesses/limitation discussed in the previous chapter	Conclusion for the stated objectives was clearly discussed based on the obtained results. In addition, an appropriate recommendation was made for the future works to address the weaknesses/limitations discussed in the previous chapter	Conclusion for the stated objectives was clearly discussed based on the obtained results. In addition, the overall contribution of the project is clearly stated. Moreover, an appropriate and creative recommendation was made for the future works to address the weaknesses/limitations discussed in the previous chapter	

PO6 : Engineer and Society (CO2)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given mark
Ability to address social design criteria	Marks						
		Following items are not discuss at all:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	One of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	Two of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	Three of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	Four of the following items are discussed:- 1) The project address community and stakeholder needs 2) Solving community/industry problem 3) Consider local circumstances and cultures 4) Protects human health and well-being 5) Uses inherently safe and benign materials 6) Comply with rules and regulations	

PO10 : Written Communications (CO3)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Clarity and presentation of final report	Abstract	No abstract or The abstract does not reflect the contents of the thesis at all	At least two of the following items are in the abstract:- 1) Background, 2) Problem Statement, 3) Objectives, 4) Methodology, 5) Numerical results, 6) Conclusion	At least three of the following items are in the abstract:- 1) Background, 2) Problem Statement, 3) Objectives, 4) Methodology, 5) Numerical results, 6) Conclusion	At least five of the following items are in the abstract:- 1) Background, 2) Problem Statement, 3) Objectives, 4) Methodology, 5) Numerical results, 6) Conclusion.	All of the following items are in the abstract:- 1) Background, 2) Problem Statement, 3) Objectives, 4) Methodology, 5) Numerical results, 6) Conclusion. In addition, the sentences are short and concise.	
	Organization	The final report is not organized at all.	Final report lacks on overall organization. Reader has to make considerable effort to understand the underlying logic and flow of ideas.	Final report is organized via topic/flow, but in some areas it is difficult to follow the flow of ideas.	Final report is organized and clearly written for the most part. In some areas, the logic or flow of ideas is difficult to follow.	Final report is well organized and clearly written. The underlying logic is clearly articulated and easy to follow.	
	Writing Style	A lot of problems with word choices and sentence structure.	Occasional problems with word choices and sentence structure, leaving the reader unsure the meanings.	Words and sentence are adequate in general but lack energy. Reader has struggle to keep reading to the end.	Good writing style; sentences flow smoothly and evenly.	Compelling writing style; connects strongly with the reader and keeps him or her engaged right to the end.	
	Spelling and Grammar	A lot of spelling errors or A lot of grammatical errors.	Frequent spelling errors and serious grammatical errors.	Few grammatical and spelling errors.	No spelling errors and few grammatical errors.	No spelling and grammatical errors.	
	Formatting	The entire report is not presented in an appropriate format with a lot of formatting issues	The entire report is presented in an appropriate format with some misformatting issues . In addition, there are figures, tables or appendices that are not referred in the contents of the report. Moreover, some of references and citations are not presented in proper format and need to be revised	The entire report is presented in an appropriate format with minor misformatting issues . In addition, all figures, tables and appendices are referred in the contents of the report. However, some of references and citations are not presented in proper format and need to be revised	The entire report is presented in an appropriate format with minor misformatting issues . In addition, all figures, tables and appendices are referred in the contents of the report. Moreover, all citations and references are presented in proper format and do not need any revision	The entire report is presented in an appropriate format without any misformatting issues . In addition, all figures, tables and appendices are referred in the contents of the report. Moreover, all citations and references are presented in a proper format and do not need any revision.	

PO12 : Lifelong learning (CO4)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given mark
Initiative	Marks						
		Topic has not been explored at all.	Explores topic only at surface level. Providing little insight beyond basic facts. Indicating low subject interest.	Explores topic with moderate depth, yielding multiple insights. Lacks clear comprehension of topic.	Explores topic with depth of interest. Reveals significant insights of knowledge/information. But lacks of complete comprehension of subject.	Explores topic with depth of interest. Reveals significant insights of knowledge/information. Demonstrates strong comprehension of subject.	

Application	Do not make any reference to the previously gained knowledge.	Makes reference to previously gained knowledge but does not apply to problem solving.	Makes reference to previously gained knowledge and demonstrates limited capacity to utilize in problem solving.	Makes details reference to previously gained knowledge and demonstrates strong application to problem solving.	Makes details reference to previously gained knowledge and demonstrates strong application to problem solving in creative manner.	
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References :

- 1) AC 2012-4488: EVOLVING A RUBRIC FOR USE IN ASSESSING ENGINEERING GRADUATE ATTRIBUTES IN A STUDENT SENIOR RESEARCH THESIS by A. Chong and L. Romkey, University of Toronto
- 2) A Guide to Final Year Project Assessment for Staff and Students : City University of Hong Kong
- 3) 2016 PPKEE Capstone Rubric
- 4) The University of Manitoba Faculty of Engineering Graduate Attribute Rubrics : June 2015
- 5) Teaching Assessment Rubric: Lifelong Learning. Department of Nutrition and Food Science, Texas A&M University

Rubric for FYP Viva Voce (PPKEE, Academic Session 2020/2021)

PO11 : Project Management (CO4)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Ability to plan and manage engineering activities to be within time constraint.	Initiating the project	No project objective	Project objectives are not clear.	Project objectives are clear but cannot be measured.	Project objectives are clear and can be measured.	Project objectives are clear and can be measured. In addition, the stated objectives are new and have not been addressed before by previous researchers.	
	Planning the project	Did not identify resources needed for the project or No schedule on project activities	Some resources to complete the project have been identified. However only less than half of the specific activities/tasks required to complete the project have been identified.	Some resources to complete the project have been identified. In addition, more than half of the activities required to complete the project have been identified. However, the schedule omitted significant activities/tasks	Most resources to complete the project have been identified. Moreover, almost all activities to complete the project have been identified. Furthermore, a comprehensive schedule has been developed but with unrealistic due dates.	All resources to complete the project have been identified. Besides, all activities to complete the project have been identified. Furthermore, a comprehensive schedule with realistic due dates has been developed.	
	Monitoring and Controlling the project	Did not identify or correct problems encountered during project execution	Identified most problems encountered during project execution but did not correct them.	Identified and corrected most problems encountered during project execution.	Identified and corrected all problems encountered during project execution.	Identified and corrected all problems encountered during project execution with innovative way .	
	Closing the project	Did not describe any lessons learned from the project	Lessons learned from the project have been described. However, no appropriate recommendation was made	Lessons learned from the project have been described. In addition, an appropriate recommendation to improve the delivery of the future similar project was made. However, the recommendation is on the surface level without details explanation	Lessons learned from the project have been described. In addition, an appropriate and details recommendation to improve the delivery of the future similar project was made	Lessons learned from the project have been described. In addition, an appropriate, details and creative recommendation to improve the delivery of the future similar project was made	

PO10 : Oral Communications (CO3)

		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Communication skills for viva voce	Organization and Articulation	The presentation is not organized at all.	Presentation rambles. Not organized where key ideas are difficult to identify. No clear introduction, supporting details and summary.	The presentation has some structure. Key ideas are identifiable. Introduction, supporting details and summary are too broad or too detailed.	The presentation has a clear structure and is easy to follow. Key ideas are clearly and concisely articulated. There are sufficient details on introduction, supporting information and summary.	Presentation logically and skillfully structured. Key ideas are compelling, and articulated with exceptional clarity and concision. Introduction, supporting details and summary are clearly evident and memorable.	
	Non-verbal delivery	Have one or more following items during the presentation:- 1) Hard to understand or hear 2) Uses aids excessively or not at all 3) Reads from paper 4) Speaker appears uncomfortable	Have one or more following items during the presentation:- 1) At times difficult to hear or understand 2) Overuse or underuse aids 3) Reads from paper 4) Speaker appears uncomfortable	Have one or more following items during the presentation:- 1) At times difficult to hear or understand 2) Overuse or underuse aids 3) At times presentation seems memorized 4) Speaker appears tentative	Have all of following items during the presentation :- 1) Can be heard easily 2) Speaks comfortably with some aids 3) Explanation extended beyond slides 4) Speaker appears comfortable	Have all of following items during the presentation :- 1) Can be clearly heard 2) Speaks confidently with few aids 3) Explanation extended beyond slides 4) Speaker is polished	
	Visual Aids	Slides are very poorly designed with all of following issues:- 1) Difficult to read 2) Poor level of detail 3) Missing captions or labels 4) Misspelled words	Slides are poorly designed with at least one of following issues :- 1) Difficult to read 2) Poor level of detail 3) Missing captions or labels 4) Misspelled words. The slides look unprofessional.	Slides are somewhat well designed, used and integrated into the presentation. The slides look somewhat professional.	Slides are well designed, used and integrated into the presentation. The slides look professional.	Slides are skillfully or creatively designed, skillfully used and seamlessly integrated into the presentation. The slides look polished and professional.	
	Question and Answer	Have one or more following items during question and answer:- 1) Do not understand most of the questions 2) Unable to answer most of the questions	Have one or more following items during question and answer:- 1) Not actively listen to questions 2) Do not provide knowledgeable answers 3) Unable to answer questions succinctly	Have one or more following items during question and answer:- 1) Understands most questions 2) Responds somewhat knowledgeably 3) Answers questions somewhat succinctly	Listens to questions carefully and responds courteously, knowledgeably and clearly to questions.	Skillfully manages and responds to questions and also gauges questioners' understanding.	
	Time Management	Do not come in time for the presentation	Presentation is unsuitably short or unreasonably long.	Presentation does not quite fit within the time constraint and the presenter has to rush or slow down at the end.	Presentation fits within the time constraint, though presenter might have to subtly rush or slow down.	Presentation fits perfectly within time constraint.	

References :

1) Graduate Attribute Rubrics : Faculty of Engineering, University of Manitoba

Rubric for FYP Technical Paper (PPKEE, Academic Session 2020/2021)

PO4 : Investigation (CO1)		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
	Goals/Purpose of the paper	The goals are not developed and stated at all	The goals are partially developed and stated	The goals are not fully developed and stated	The goals are developed and explicitly stated	The goals are strongly developed and explicitly stated	
Ability to define the goals and analyze previous works (Sections : Introduction and Related works)	Previous Works	No discussion on the previous related works at all	Very limited background information on previous works or Very hard to grasp the problems of previous works and why the current study is important or No outline for remaining section is given	Some background information on previous works is given. Have an idea of the problems of previous works and the importance of current study but not exactly clear. Outline for remaining section is sketchy	Appropriate background information on previous works is presented in an organized fashion. Problems of previous works and the importance of the current study are clear. Outline of the remaining section present and easily understandable. However, most of the references are not from the last two or three years (2015,2016, 2017)	Appropriate background information on previous works is presented in an organized fashion. Problems of previous works and the importance of the current study are clear. Outline of the remaining section present and easily understandable. In addition, most of the references are from the last two or three years (2015,2016, 2017)	
Ability to devise methodology to achieve the goals (Section : Methodology)	Overall Flow	No or wrong description of the methodology	Weak description of methodology or The described methodology is not convincing enough to achieve the stated goals.	Description of the methodology is sufficient details and convincing enough to achieve the stated goals. However, the justification for the methods chosen or the design decisions made is not clear.	Description of the methodology is sufficient details and convincing enough to achieve the stated goals. In addition, the justification for the methods chosen or the design decisions made is clear. However, no discussions on the limitation of the chosen method or the design decisions made and their impact on the results.	Description of the methodology is sufficient details and convincing enough to achieve the stated goals. In addition, the justification for the methods chosen or the design decisions made is clear. Furthermore, the limitations of the chosen method or the design decisions made and their impact on the results are discussed.	
	Experiment procedure	No description of experimental procedures at all	Weak description of experimental procedures to obtain the results that can provide judgment whether the stated goals are achieved or not	A clear description of experimental procedures to obtain the results that can provide judgment whether the stated goals are achieved or not. However, the justification of the chosen procedures is not clear and not supported by valid references	Clear and concise description of experimental procedures to obtain the results that can provide judgment whether the stated goals are achieved or not. In addition, the justification of the chosen procedures is clear and supported by valid references. However, no comparison with previous works as discussed in the introduction/related works section.	Comprehensive and concise description of experimental procedures to obtain the results that can provide judgment whether the stated goals are achieved or not. In addition, the justification of the chosen procedures is clear and supported by valid references. Furthermore, there is a comparison with previous works as discussed in the introduction/related works section.	
Ability to present results and then draw valid conclusions (Sections : Results & Discussions and Conclusions)	Results	No results	Data collection and assessment results need improvement	Data collection and assessment results are somewhat clear and logical, moderately supporting the goals of the paper	Data collection and assessment results are clear and logical, supporting the goals of the paper	Data collection and assessment results are very clear and logical, strongly supporting the goals of the paper	
	Conclusion	No conclusion	The conclusions are minimally effective and do not appear to be supported by the data	The conclusions are moderately effective and are only partially supported by the data	The conclusions are well formulated and are supported by the data	The conclusions are very well formulated and are strongly supported by the data	

PO10 : Written Communications (CO3)

PO10 : Written Communications (CO3)		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
Clarity and presentation of technical paper	Organization	The paper is not organized at all	There is little apparent structure to the flow of ideas, causing confusion	The order in which ideas are presented is occasionally confusing	The order in which ideas are presented is reasonably clear, logical and effective, but could be improved	The order in which ideas are presented is explicitly and consistently clear, logical and effective	
	Writing Style	The paper cannot be read at all due to sentence/paragraph structure and word choices	The paper is difficult to read/understand due to sentence/paragraph structure, word choices and lack of explanation	Multiple sections of the paper are difficult to read/understand. The paper could be better structured or more clearly explained	The paper is mostly understandable, with occasional inconsistencies that could be improved	The paper is clear, concise and consistent. It is easily understandable and a pleasure to read	
	Spelling and Grammar	A lot of spelling errors or A lot of grammatical errors	Grammar or spelling errors distort meaning and make reading difficult	Some grammar or spelling errors are significant and detract from the content. Paper requires further editing	Minor grammar or spelling errors are present but do not detract from the content. Content is clear	The writing is perfect with no grammar or spelling errors	

PO12 : Lifelong learning (CO4)

PO12 : Lifelong learning (CO4)		Fail 0	Unsatisfactory 1	Needs work 2	Competent 3	Exemplary 4	Given marks
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Initiative	Topic has not been explored at all.	Explores topic only at surface level. Providing little insight beyond basic facts. Indicating low subject interest.	Explores topic with moderate depth, yielding multiple insights. Lacks clear comprehension of topic.	Explores topic with depth of interest. Reveals significant insights of knowledge/information. But lacks of complete comprehension of subject.	Explores topic with depth of interest. Reveals significant insights of knowledge/information. Demonstrates strong comprehension of subject.	
Application	Do not make any reference to the previously gained knowledge.	Makes reference to previously gained knowledge but does not apply to problem solving.	Makes reference to previously gained knowledge and demonstrates limited capacity to utilize in problem solving.	Makes details reference to previously gained knowledge and demonstrates strong application to problem solving.	Makes details reference to previously gained knowledge and demonstrates strong application to problem solving in creative manner.	

References :

- 1) Teaching Assessment Rubric: Lifelong Learning. Department of Nutrition and Food Science, Texas A&M University
- 2) <https://www.asee.org/conferences-and-events/conferences/annual-conference/2016/papers-management/for-reviewers>
- 3) <http://www.stat.purdue.edu/~jennings/stat582/notes/index.html>