ESD 1 DRAFT Report - Semester 1, 2017

Marking Rubric

This rubric is to be used to assess the final report. Circle the mark within the category that you feel best applies to the submitted work. For characteristics, circle the most appropriate response, where NA is "Not Applicable". **Greyed out sections optional for Draft Report.**

Class Number: _____

Group Number _____

Assessor Name : _____

Structure	Readability	Figures	Experimental Method and Modelling	Design Problem	Discussion / Recommendation	TOTAL
/10	/10	/10	/20	/30	/10	/ **90**

Comments

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Structure

Unacceptable		**Poor**		**Average**		**Good**		**Excellent**	
1	2	3	4	5	6	7	8	9	10

Unacceptable/Poor: The report is badly structured with little resemblance to a professional and well planned document. Many of the structural characteristics below have been ignored.

Average: The report demonstrates that it was created with reasonable thought and planning. Included elements strengthen the document and have been added in a logical manner. Most structural characteristics have been addressed.

Good/Excellent: The report demonstrates a professional level of attention, building a logical argument or clearly reporting the development of the design project. All of the structural characteristics have been addressed at a good level.

Structural characteristics

There is a clear abstract of less than 200 words	No / Yes
There is an informative introduction.	No / Yes
There is an informative conclusion.	No / Yes
Key data is emphasised and labelled clearly.	Little / Some / All
The report clearly states the requirements that constrain it.	No / Yes
Important statements are referenced.	Little / Some / All
The APA 6th method of referencing is followed correctly.	No / Yes
Required appendices are included. (optional for draft report)	NA / No / Yes
Appendices are referred to in the document body. (optional for draft report)	NA / No / Yes
All MATLAB code is included in the appendices. (optional for draft report)	No / Yes

Readability

Unacceptable		Poor		Average		Good		Excellent	
1	2	3	4	5	6	7	8	9	10
Unacceptable/Poor: The report is difficult to read and understand. Many of the readability characteristics below have been ignored.									
Average: The report is reasonably easy to read and understand, with a logical flow. Most readability characteristics have been addressed.									
Good/Excellent: The report is clear, interesting and concise. All of the readability characteristics have been addressed at a good level.									

Readability Characteristics

Sections start with a clear and concise purpose.	Rarely / Some / All
Key results are identified and explained in adjacent text.	Rarely / Some / All
Pages are numbered.	No / Yes
Units are explicit and consistent.	NA / No / Yes
Correct grammar is used.	Some / Mostly / All
Spelling is correct.	Some / Mostly / All
Text is concise and relevant.	Some / Mostly / All
Language used is simple and clear.	Some / Mostly / All
Language is suitably formal.	No / Yes
Language is suitably unbiased and impersonal.	No / Yes
Sections are logically linked.	Rarely / Some / Always
The document reads as a cohesive report, not disparate sections by multiple authors.	No / Yes

Figures

Unacceptable		Poor		Average		Good		Excellent	
1	2	3	4	5	6	7	8	9	10
Unacceptable/Poor: Figures, tables and equations are poorly designed and somewhat arbitrary. Many of the figure design characteristics below have been ignored.									
Average: Figures, tables and equations are generally clear and meaningful. Most figure design characteristics have been addressed.									
Good/Excellent: Figures, tables and equations are well designed and add significantly to the report. All of the figure design characteristics have been addressed at a good level.									

Figure Design Characteristics

Figures, tables and equations are numbered and labelled.	Some / Most / All
Figures, tables and equations are consistently formatted.	No / Yes
Figures, tables and equations are explained in adjacent text.	Some / Most / All
Tables, figures and equations are clear and understandable.	Some / Most / All
Figures include dimensions where necessary.	Some / Most / All
Data is represented in a clear and appropriate format.	Some / Most / All

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Experimental Method and Modelling

Unacceptable		**Poor**		**Average**		**Good**		**Excellent**	
0	4	6	8	10	12	14	16	18	20

Unacceptable/Poor: Experimental method poorly described. Little control over experimental variables or too few data points. Poor system models with little justification of relevant theory. Models used without being validated.

Average: Experimental method is generally clear, well planned and described in a basic fashion. A reasonable amount of data gathered with most variables under control. Reasonable description of background theory and associated modelling. Some models verified by experimental data.

Good/Excellent: Experimental method is well designed and described in detail to be easily reproduced. A large data set has been collected to ensure quality of results. Experimental variables are kept well under control. Good description of background theory and linked well to the proposed models. Most models verified by experimental data.

Experimental Method and Modelling characteristics

Explanation of how the project was carried out in the team.	Poor / Average / Good
Description of the relevant theory used in the experiments / modelling.	Poor / Average / Good
Amount of experimental data collected.	Poor / Average / Good
Data is represented in a clear and appropriate format.	Some / Most / All
Models adequately verified with experimental data.	None / Turbine / Treatment / Storage
Rig performance is assessed with designed components.	No / Yes
Wind Turbine	
Description of experimental data gathering methods.	Poor / Average / Good
Plot of $C_P(\lambda)$ for the fixed pitch flat blade.	Poor / Average / Good
Plot of $C_P(\lambda,\beta)$ for custom designed blades. (optional)	Poor / Average / Good
Water pumping and storage system	
Description of experimental data gathering methods.	Poor / Average / Good
Determination of tank orifice coefficient C_D.	Poor / Average / Good
Determination of the rig pump flow rate Q.	Poor / Average / Good
Estimation of rig pump power / pressure head.	Poor / Average / Good
MATLAB model of rig pumping and storage system.	Poor / Average / Good
Water disinfection system	
Determination of ozone decay rate constants and pathogen inactivation rate constants over the operating temperature range.	Poor / Average / Good
MATLAB/EXCEL model of steady state CFSTR.	Poor / Average / Good

Design Problem (Real-World)

Unacceptable		Poor		Average		Good		Excellent	
0	6	7	12	13	18	19	24	25	30
Unacceptable/Poor: Basic assessment of community's needs with little research to back up assumptions. Some subsystems appear poorly designed or with little justification. Basic scale-up design.									
Average: Good analysis of real-world design factors. Models (both scale and MATLAB code) appear to be adequate. Justified choice of design parameters of most systems.									
Good/Excellent: Comprehensive analysis of real-world design factors. Design parameters justified through research or results derived from rig experiments. All design specifications appear to have been met.									

Design Problem characteristics

Assessment of water requirements of community.	Poor / Average / Good
Assessment of power requirements of community.	Poor / Average / Good
Assessment of project location (including wind data).	Poor / Average / Good
Assumptions are clearly stated.	Little / Some / All
Knowledge and explanation of relevant theory for design.	Poor / Average / Good
Wind turbine	
Wind turbine blade design procedure (i.e. choice of size and shape, sketch).	Poor / Average / Good
Estimate of typical power output produced by turbine.	Poor / Average / Good
Suitability of the wind turbine for the required pump power.	Poor / Average / Good
Water Pumping and storage system	
Selection of tank design parameters (size, shape, sensors, material).	Poor / Average / Good
Selection of pipe design parameters (length, diameter, friction estimate).	Poor / Average / Good
Selection of pump (flow rate, pressure head, power)	Poor / Average / Good
MATLAB model of full-scale tank system (including plots).	Poor / Average / Good
Water disinfection system	
MATLAB/EXCEL model of CFSTR linked to log inactivation credit calculation.	Poor / Average / Good
Selection of CFSTR parameters (size, residence time, operating time, material)	Poor / Average / Good

Discussion / Recommendation

Unacceptable		Poor		Average		Good		Excellent	
1	2	3	4	5	6	7	8	9	10
Unacceptable/Poor: Poor identification of main themes and results of the project. Superficial discussion.									
Average: Main themes and findings identified with some supporting interpretation of the results. Some mention made to other similar research, designs or experiments. Recommendations lack insight.									
Good/Excellent: Good interpretation of the results, backing up the key findings of the project and report. Key data is highlighted and limitations of the design are discussed. Recommendations show careful consideration and suggest appropriate future actions for the project or improvements that could be made to the design.									

Discussion / Recommendation characteristics (for draft report: Preliminary Discussion)

Main themes and findings of the design project are identified.	No / Yes
Interpretation and analysis of the results as a whole to support findings.	Poor / Average / Good
Key data is emphasised and labelled clearly.	Little / Some / All
Discussion of limitations of design.	Poor / Average / Good
Results linked to other similar designs, research or experiments.	Little / Some / All
Suggestion of future actions for project or improvements.	Poor / Average / Good