

TECHNICAL REPORT GRADE SHEET

1/2

Experiment: <u>Ethanol/Water VLE</u>	Project # _____
Date: _____	Section # _____
Report Grade: _____	Group # _____
E1: _____	E2: _____
E3: _____	

Criteria	Description	Points Possible	Points Received
Cover Memo or Abstract	Complete. State objectives. Gives precise “big picture” statement of most important results and conclusions. State methods as needed.	10	
Intro. & Objectives	Interesting, relevant. Objectives clear, concise, quantitative, specific to project.	10	
Literature Review	Three research articles. Relevant. Concise but informative summary.	10	
Apparatus and Procedure	Good schematic and discussion thereof. Relates measurements to data needed to meet objectives. No 2 nd person. Not written to operator or technician. Does not assume Instructor has prior knowledge.	10	
Principles/ Equations	Complete and correct. Relates to objectives. Shows physical meaning. Relates to experiments. Equations numbered. Standard symbols used. Sufficient references. Does not assume instructor’s prior knowledge.	10	
Experimental Plan	Concise but clear description of the conditions, levels, exact runs performed. Total number of runs.	5	
Results and Discussion	Logical and orderly. Relates to project objectives. Each figure and table called out & discussed thoroughly. Good topic sentences followed by strong paragraphs. Each observation and conclusion supported. Thorough. Does not assume Instructor has prior knowledge. Critical Thinking!	20	
Conclusions	Supported by Results and Discussion. Consistent w/ Objectives. Repeat quantitative, specific findings. Relevant and useful. Critical Thinking	5	
Literature Cited	Cite all relevant journal articles, books, handbooks, etc. wherever needed in the main body. Use standard (ACS Guide) methods to call out citations. Provide complete bibliographic info. In the Lit. Cited section. No footnotes. Minimize direct quotes. No titles cited in the text.	5	
Appendix I	Copies of Laboratory Notebook pages.	5	
Appendix II	Copy of Sample Calculations.	5	
Appendix III	Copy of three articles cited in Lit Review.	5	
Lab Notebook Appendix	Submit raw data; copy pages from notebook	5	
Documentation Appendix	Document sample calculations; provide sufficient narrative, working equations, units, etc. so that TA can follow the calculations.	5	
Appearance	All required sections. Margins observed. Neat handwriting if necessary. Stapled or clipped. Neat. Conform to Lab Manual instructions	5	

Figures	Informative titles and legends. Only 1 title per fig. Clear symbols and lines. Corrected Excel or PowerPoint defaults. Margins. Large enough to read. No excessive frames or borders. Discuss every figure. Capitalize "Figure x"	5	
Tables	Informative titles and headings. Describe content of tables (columns & rows). Only 3-4 significant digits. Show units. Useful information. Corrected Excel or PowerPoint defaults. Margins. Large enough to read. No excessive frames or borders. Discuss every table. Capitalize "Table y"	5	
Grammar and Spelling	Check verb use with "data." Complete sentences. Homonyms. Apostrophes. Minimal use of possessives. No 2 nd person. Noun / verb agreement.	5	
Digital Report	CD Included with the final report (in a single word document) and all files used to calculate the results recorded.	10	

Required Content

1	Compute and plot the following: x-y diagram, T-x-y diagram	23.3	
2	Calculate and plot experimental γ_1 and γ_2 versus x_1 for both components on the same graph. Use these to extrapolate to the infinite dilution activity coefficients. Also, examine the graphs and discuss whether they appear as expected.	23.3	
3	Perform a thermodynamic consistency check of the data as described in the handout.	23.3	
4	Using the Wilson equation and the set of interaction parameters given to you from the literature, compare these calculated activity coefficients with the experimental data. Plot a point-to-point comparison of γ_{lit} and γ_{exp} , i.e., use the experimentally determined temperature (T) at each point. Then try an average temperature, predict a range of γ_{Tave} found from $y_1 = 0 \rightarrow 1$ (20 points). Can T_{ave} be used as a good approximation?	23.3	
5	Obtain model parameters for the Van Laar and Margules equations by fitting the linearized forms of the equations. Plot the activity coefficients obtained from the fit to the Van Laar and the Margules equations. How well do the models fit the experimental data?	23.3	
6	Compare your data to reliable x-y-T data from the literature.	23.3	
	Total	280	
	Percentage of Total		