ChE 415/416 – Unit Operations Laboratory – Prelab Grading Sheet

Experiment: *Team # and Members:*

Written Prelab: Gateway Criteria

A check here means the written report is unacceptable. Correct and resubmit it by _____.

___ Appearance or writing style unprofessional.

___ Averages more than one grammatical error / spelling error / typo per page.

___ Format of figures / tables / references / equations unacceptable.

___ Section(s) missing or report too long.

____ Grades of F for at least one trait in the Primary Trait Analysis.

Grade Breakdown and Scores

Section	*Weighting*	*Original Grade*	*Rewrite Grade*
Prelab Discussion			
Design and Experimental Objectives			
Introduction / Experimental Plan Overview			
Experimental Methods / Schematic and Description of Apparatus			
Experimental Methods / Test Matrix			
Experimental Methods / Operating Procedure			
Experimental Methods / Safety Concerns			
Data Analysis / Expected Data and Results			
Data Analysis / Sample Calculations			
Data Analysis / Statistical Methods			

Rewrite: Voluntary or Mandatory

Prelab Grade: _____

(This score does not reflect any reduction for a mandatory rewrite penalty)

Team is cleared for experimental work: _____

Prelab Discussion

(All / Most / One / None) of the members of the team showed acceptable understanding of the project.

In discussing the theory underlying the experiment, the team:

A	Had, at worst, a few minor misconceptions involving extension or synthesis of undergraduate and literature material.
B	
C	Had minor misconceptions involving knowledge or application of undergraduate material.
D	
F	Had major misconceptions involving knowledge of application of undergraduate material.

In discussing the conduct of the experiment, the team:

A	Made only a few errors which they could not have foreseen without experience running the equipment
B	
C	Made a few errors which they might have avoided by thinking carefully beforehand.
D	
F	Made numerous major and minor errors which they might have avoided by thinking carefully beforehand.

The team's response to questioning and criticism was generally:

A	Positive. They showed a desire for full understanding.
B	
C	Neutral. They accepted it, but returned few constructive or clarifying questions.
D	
F	Negative. They were unjustifiably argumentative or sullen.

Comments:

Written Prelab: Primary Trait Analysis

Design and Experimental Objectives _____

A	Clearly identifies design objective and states all experimental results required for an excellent design.	Style & mechanics (+ / -)
B		____ Style
C	Required experimental results listed, but not clearly related to the design objective.	____ Order
D		____ Content
F	Design objective not stated or required experimental results not specified.	____ Grammar/Spelling

Introduction

Experimental Plan Overview _____

A	Identifies all variables controlled and measured to meet all objectives. No technical errors.	Style & mechanics (+ / -)
B		____ Style
C	Missing some variables needed to meet the experimental objectives, or has minor technical errors.	____ Order
D		____ Content
F	Missing several variables needed to meet experimental objectives or has major technical errors.	____ Grammar/Spelling

Experimental Methods

Schematic and Description of Apparatus _____

A	Complete and correct schematic. Description easily connected to schematic.	Style & mechanics (+ / -)
B		____ Style
C	Some format or technical errors, or description not easily connected to schematic.	____ Order
D		____ Content
F	Major technical errors, or schematic or description missing.	____ Grammar/Spelling

Experimental Test Matrix

A	Specifies all experimental conditions with reasonable values, sufficient range to meet all objectives, reasonable number of runs, repeat runs. Chemical usage calculated.	Style & mechanics (+ / -)
B	Minor insufficiency in one criterion.	____ Style
C	Minor insufficiency in more than one criterion.	____ Order
D	Major insufficiency in one criterion.	____ Content
F	Major insufficiency in more than one criterion.	____ Grammar/Spelling

Operating Procedure _____

A	Includes all necessary steps in setup, conduct of experiment, and shutdown. All steps feasible and sensible. Specific. Logical order. Procedure refers to schematic as appropriate. Minimizes likely sources of error, time-wasting.	Style & mechanics (+ / -)
B		____ Style
C	Some errors or omissions in criteria listed above.	____ Order
D		____ Content
F	Missing major steps, particularly in identifying a logical order or minimizing likely sources of error.	____ Grammar/Spelling

Safety Concerns _____

A	States all major hazards associated with equipment, each chemical. Defines appropriate protection, first aid, and disposal. No factual errors.	Style & mechanics (+ / -)
B		____ Style
C	As above, but with some errors.	____ Order
D		____ Content
F	Missing several major points or containing several errors.	____ Grammar/Spelling

Data Analysis

Expected Data and Results _____

A	Shows values or trends for all data and for all key results. Values and trends appear reasonable. Uses values from test matrix and common sense to make quantitative estimates. Includes units.	Style & mechanics (+ / -)
B		____ Style
C	Some errors or omissions in showing expected values or trends for data and key results. Most values and trends appear reasonable. Includes units.	____ Order
D		____ Content
F	Predictions missing for much data or several key results or predictions are generally unreasonable or units are missing.	____ Grammar/Spelling

Sample Calculations

A	Explains clearly how data will be used to meet all objectives. Uses relevant project-specific equations. States underlying assumptions. Presents calculations in logical order. Includes units.	Style & mechanics (+ / -)
B		____ Style
C	Explains how data will be used to meet all objectives, but requires reader to infer some steps or leaves out some underlying assumptions.	____ Order
D		____ Content
F	Missing major steps or most underlying assumptions or units.	____ Grammar/Spelling

Statistical Methods

A	Uncertainties for all values stated. Uncertainties appropriately based on propagation of experimental error or on statistical methods. States how error will be calculated. Planned evaluation of model equations based on variance, correlation coefficient, and/or residual plots. Comparison of values based on hypothesis testing (e.g. t-test) as appropriate. Specific.
B	
C	Some minor errors or omissions in the criteria presented above.
D	
F	Uncertainties not given for most values, or basis for most uncertainties unclear, or major errors in application of statistical methods.