

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

Experiment:

Group:

Prelab Discussion

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

In discussing the theory underlying the experiment, the group:

- | | |
|---|---|
| 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 group:

- | | |
|---|--|
| 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 group'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: Gateway Criteria

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

- ___ Appearance or writing style unprofessional.
 - ___ Averages more than about 1 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.
-

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. 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.

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

Prelab Grade: _____