

# Technical Writing for Scientists/Engineers

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\*\*Edited from lectures of Dr. T. Creasy, Mechanical Engineering,  
based on **A Guide to Writing as an Engineers**, **Beer and McMurrey**

# Writing Topic #1

Why technical writing?

Constructing Graphs &  
Tables

# Scientists/Engineers Write a Lot— 40% of Work Time!

- “Word-smithing is a much greater percentage of what I am supposed to be doing in life than I would ever have thought.” *Donald Knuth, Computer Science Engineer, creator of TeX typesetting software.*

# Scientists/Engineers Can Learn to Write Well ...

- ... but we are not refashioning you as an English major—this is not creative writing!
- This class presents drills and develops your skills to improve your technical writing.
- Practice and ...
- “Write and rewrite until right.”

# “Best Practice”

“Best practice is a management idea that asserts that there is a technique, method, process, activity, incentive or reward that is more effective at delivering a particular outcome than any other technique, method, process, etc.” [en.wikipedia.org](http://en.wikipedia.org), 2006

# Why is This Table 'Poor Practice?'

**Table 1. Data**

SECONDS	Volts	Volts	V/v	Change
637.13	-0.26870728	-0.1128435	0.419949582	
1758.4	-0.26871681	-0.088706	0.330109679	-21.39%
1105.6	-0.02263396	-0.0269985	1.192832474	
1136.9	-0.02263403	-0.0185084	0.817725809	-31.45%

Table 1: Data

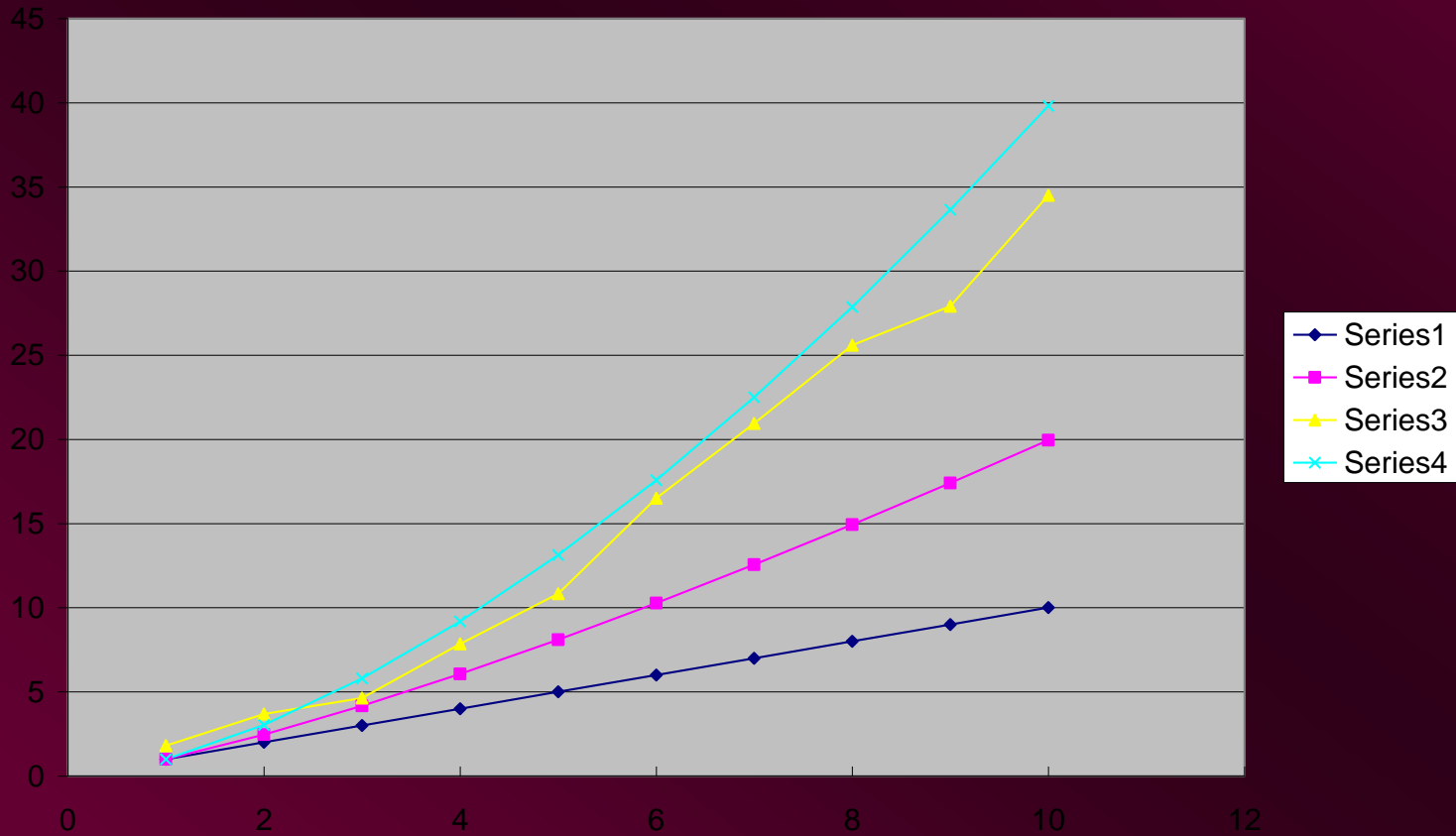
# Why is This Table 'Best Practice'

**Table 1. A sample of the raw data shows that the circuit is not a linear attenuator. The output voltage is a function of the input voltage and time.**

Input (v)	Time (s)	Output (v)	Input/Output	Difference in Output
-0.2687	637	-0.11284	2.3812	
	1758	-0.08871	3.0292	-21.39%
-0.02263	1106	-0.02700	0.8383	
	1137	-0.01851	1.2229	-31.45%

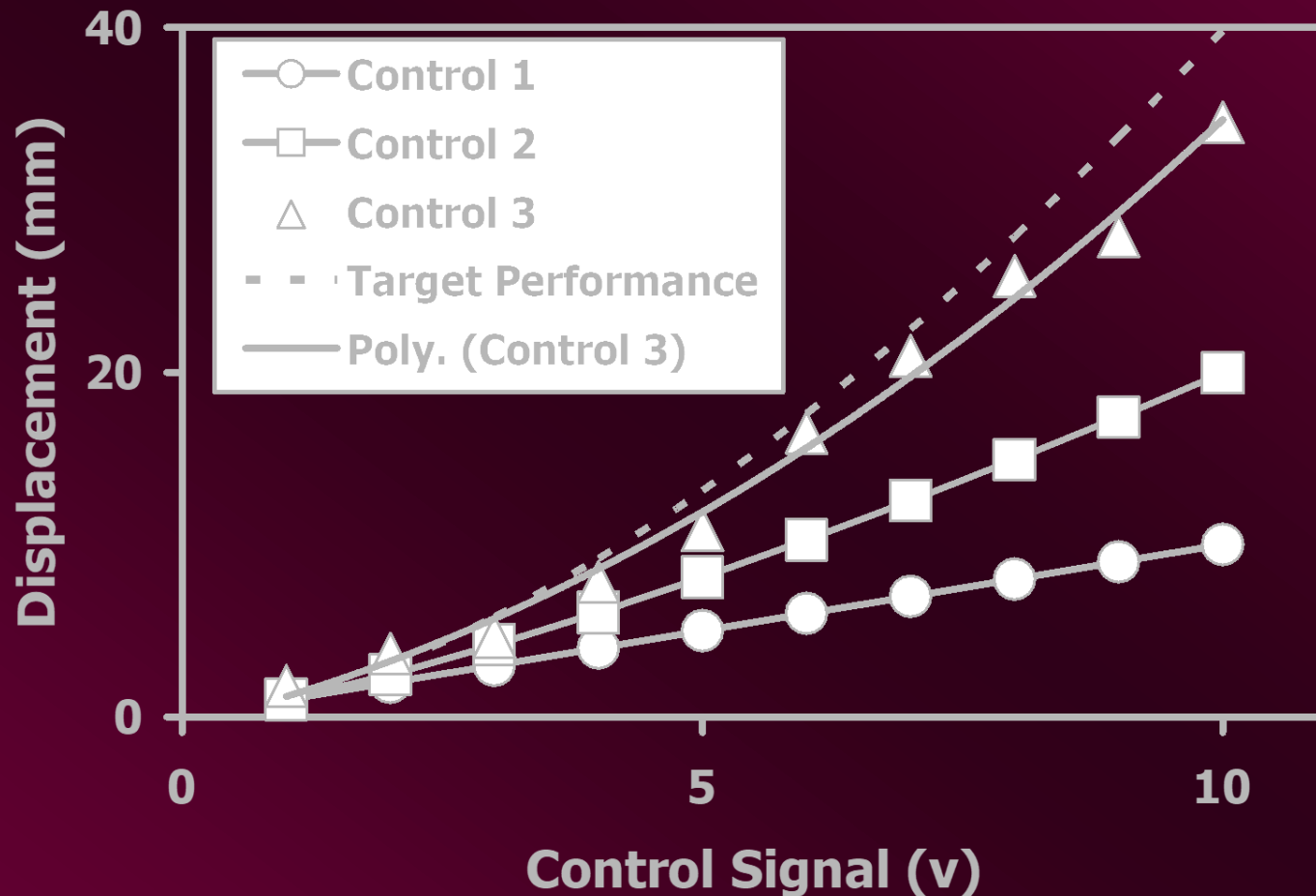
# Why is This Graph 'Poor Practice'

Figure 7: Data from the testing.



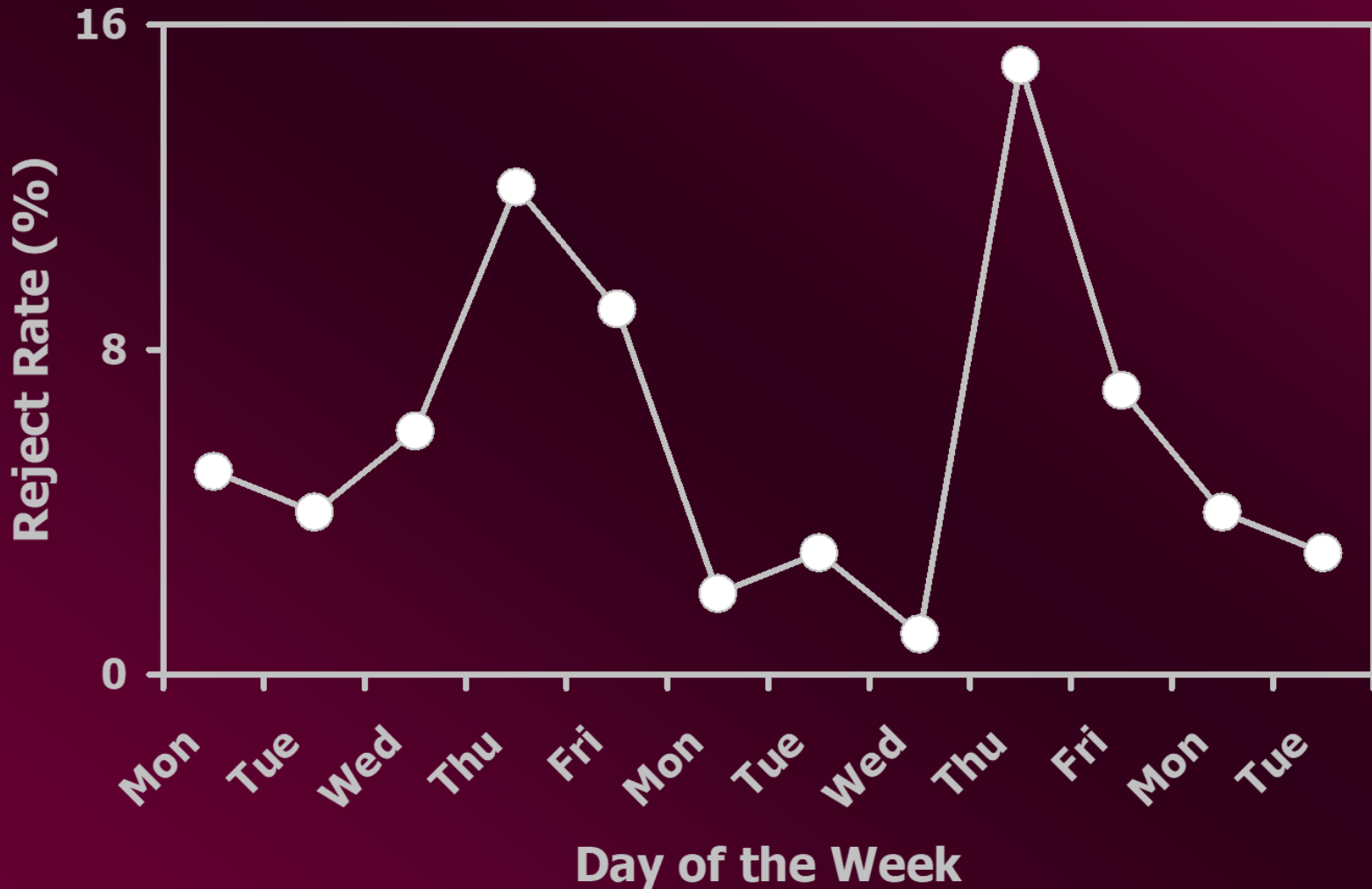


# Why is this Graph 'Best Practice?'

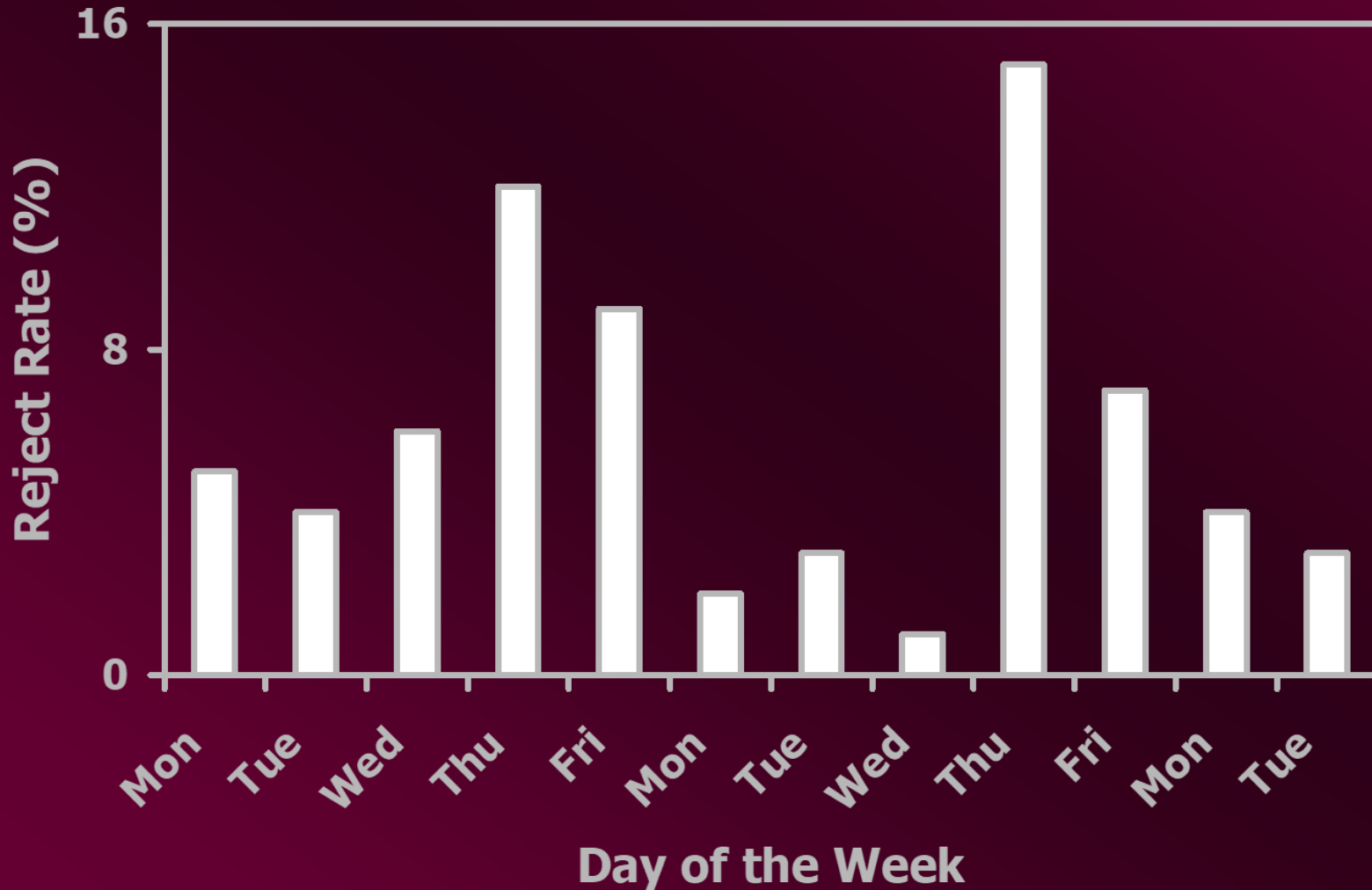


**Figure 7. Displacement generated by two of three control circuit designs failed to achieve the target performance.**

# Is This a Graph or a Chart?



# Bar Chart is Appropriate



# When to use Line Graphs vs. Bar Charts

- When change over time (or exercise intensity or some other continuous variable) is a key element of the data.
- When repeated measures are taken on the same individual.

# Before preparing your tables and graphs for Lab #1 Report

- Read and re-read instructions about tables and graphs on page 2 of KINE 439W Guidelines for Preparing Lab Reports
- Learn how to embed a text box to include a caption below figures. Tables are usually titled, with explanatory footnotes underneath the table.
- Learn how to embed a figure and wrap text around it, so that text in your report referring to that figure/table is on the same page.

For great example of figure construction, captioning and embedding see

<http://jsgreen.tamu.edu/439.htm>

“Sample Lab Graph Embedded in Text”

**KINE 439W LAB REPORT GRADING RUBRIC**  
**LAB REPORT #1 (no citations required)**

Also found  
on jsgreen website:  
<http://jsgreen.tamu.edu/439.htm>

**CONTENT**

\_\_\_50% unsatisfactory \_\_\_80% acceptable \_\_\_90% good \_\_\_100% outstanding

**COMPLETENESS**

Were all data reported?

Were all assigned questions/discussion items addressed?

**ACCURACY**

Consistent data reports among group members?

Is the physiology cited/used to explain results accurately cited and applied?

**SOPHISTICATION**

Are you providing physiological explanations in more than very basic terms?

**WRITING**

\_\_\_50% unsatisfactory \_\_\_80% acceptable \_\_\_90% good \_\_\_100% outstanding

**GRAMMAR/SPELLING/PUNCTUATION**

**LOGICAL FLOW/CLARITY**

**GRAPHICAL PRESENTATION OF DATA**

**FINAL SCORE**

\_\_\_50% unsatisfactory \_\_\_80% acceptable \_\_\_90% good \_\_\_100% outstanding