

ELEC-1092 - LAB #3

Part 1 - Worth 5% of your final Mark

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Lab Info & Objective

The object of this assignment is to copy a set of data values into an Excel spreadsheet, manipulate the data with a set of electrical equations & then summarize the data with a graph.

Sheets 1-4 and sheet 6 lead you through the assignment where at the end you will produce sheet 5. Make the graph approximately the same size as shown on sheet 5. You do not need to create all the different sheets, just the final product like page 5. YOU MUST SHOW ALL THE DATA.

Submit in your finished sheet online (FOL online submission) during class on Saturday Week 9. Late assignments will be penalized 2% each day. Late assignments will not be graded if handed in later than Week 10.

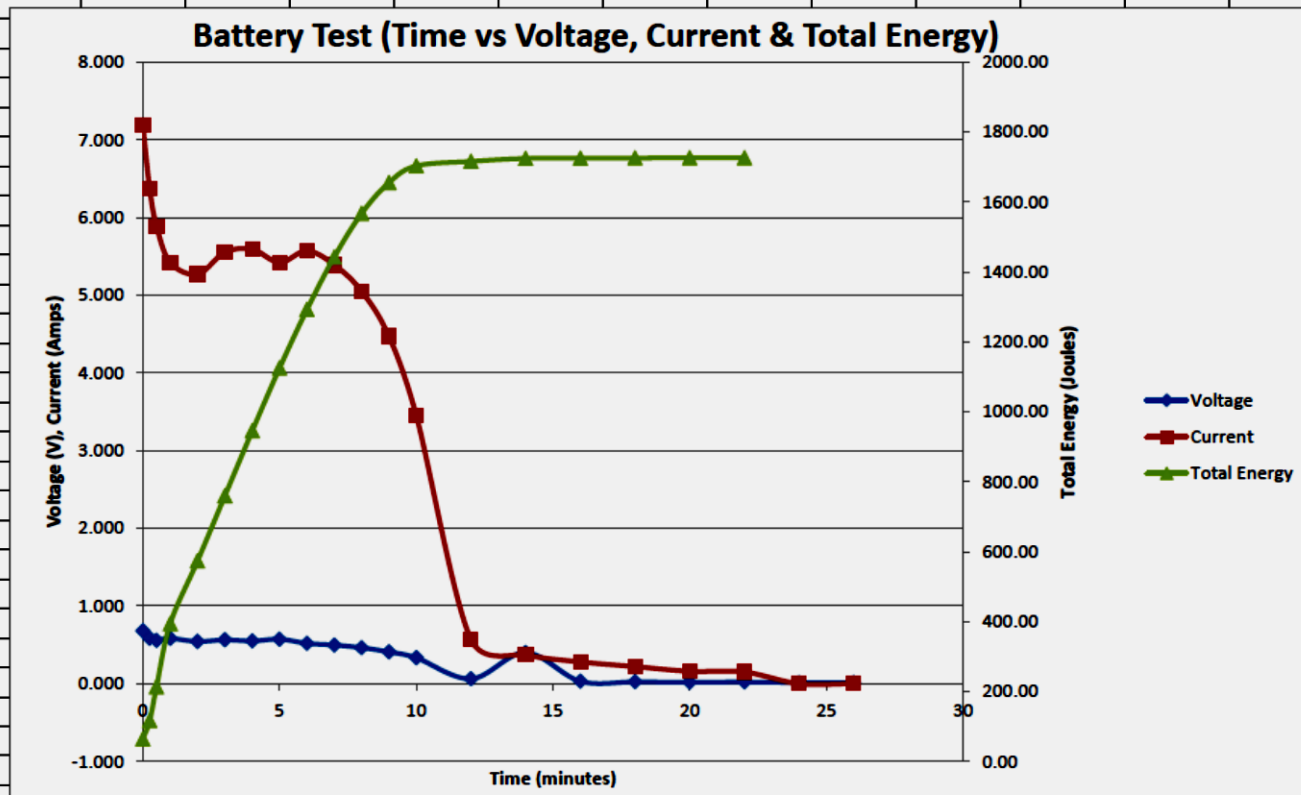
You must submit your excel document with the formulas, as well as a PDF of the data and table.

	inst.	inst.						
time	potential	current						
t	V	I						
min.	Volts	Amps						
0	0.681	7.18						
0.25	0.583	6.37						
0.5	0.555	5.89						
1	0.583	5.42						
2	0.543	5.27						
3	0.564	5.55						
4	0.55	5.59	This sheet contains the data.					
5	0.573	5.42						
6	0.519	5.57						
7	0.497	5.39						
8	0.463	5.05						
9	0.409	4.47						
10	0.333	3.45						
12	0.063	0.57						
14	0.4	0.37						
16	0.031	0.28						
18	0.024	0.22						
20	0.019	0.16						
22	0.022	0.15						
24	0.014	0						
26	0.012	0						
						Sheet 1		

Battery Test ~ F2015						Your first name and last name here followed by your section number							
			Time	Time	Time	Inst.	Avg.	Inst.	Avg.	Inst.	Avg.	Total	Running
Time	Time	Time	Interval	Interval	Interval	Potential	Potential	Current	Current	Power	Power	Energy	Total
t	t	t	Δt	Δt	Δt	V		I					Energy
hours	min.	sec.	hours	min.	sec.	Volts	Volts	Amps	Amps	Watts	Watts	Joules	Joules
	0					0.681		7.18					
	0.25					0.583		6.37					
	0.5					0.555		5.89					
	1					0.583		5.42					
	etc.					etc.		etc.					
Instructions:													
Copy the headings as above in a new Excel spreadsheet. Leave a one cell space between the headings and the data.													
Center the headings in the cells and underline the words as shown above.													
Copy <u>all</u> the data that was sent to you into the appropriate columns as shown with the arrows													
Only some of the data is shown above, but you copy all the data into the spreadsheet.													
To find the Δ symbol go to the Insert tab and then Symbol at the far right hand side of the ribbon. Scroll thru the symbols until it is found.													
Once found pick the symbol and then Insert (lower right hand) in the dialog box.													
Write Battery Test ~ F2015 as shown above in cell C1 and D1. Merge the cells.													
Write your first and last names followed by your section and student number as shown above.													
More instructions will follow for this assignment.													
Sheet 2													

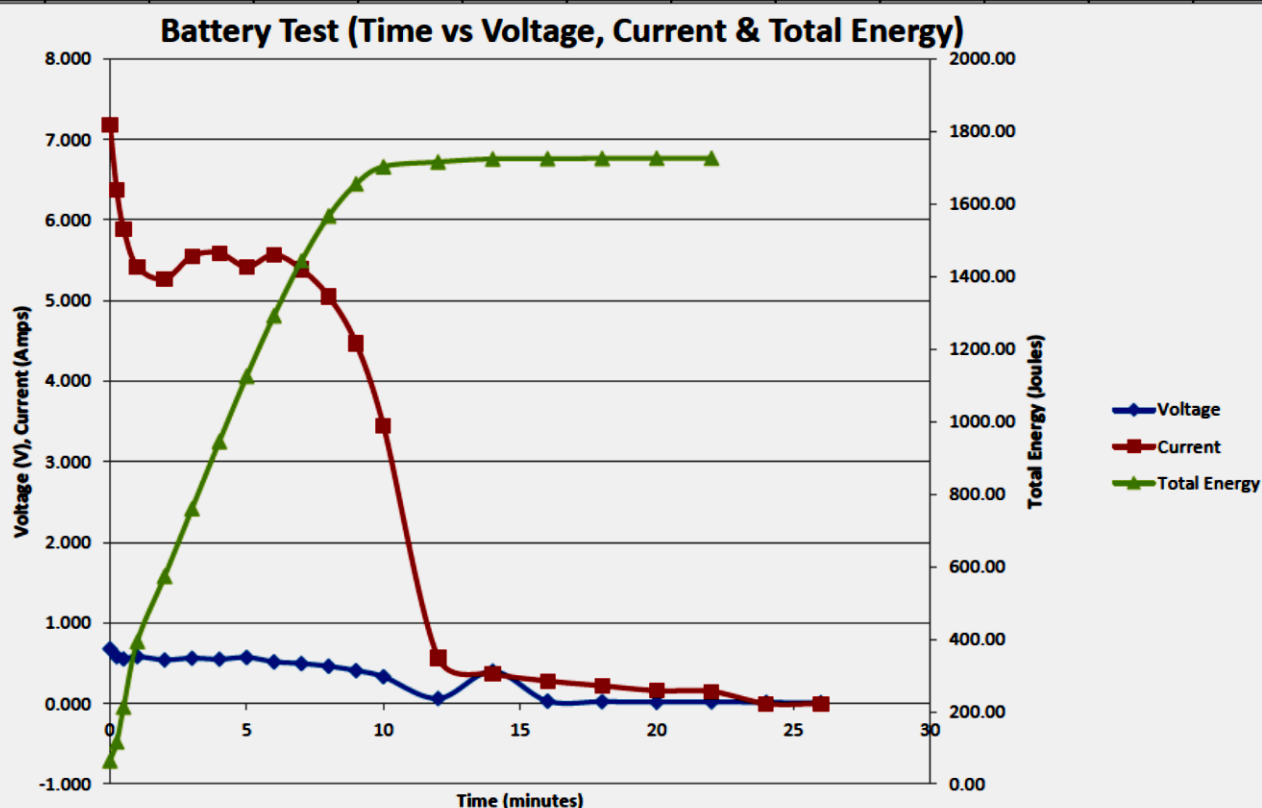
[illegible]

Battery Test~F2015			Your first and last name and Course and section number											
			Time	Time	Time	Inst.	Avg.	Inst.	Avg.	Inst.	Avg.	Total	Running	
<u>Time</u>	<u>Time</u>	<u>Time</u>	<u>Interval</u>	<u>Interval</u>	<u>Interval</u>	<u>Potential</u>	<u>Potential</u>	<u>Current</u>	<u>Current</u>	<u>Power</u>	<u>Power</u>	<u>Energy</u>	<u>Total</u>	
t	t	t	Δt	Δt	Δt	V	(Vn+Vm)/2	I	(In+Im)/2	I*V		P*Δt	Energy	
hours	min.	sec.	hours	min.	sec.	Volts	Volts	Amps	Amps	Watts	Watts	Joules	Joules	
0.000	0	0	0.004	0.25	15	0.681	0.632	7.18	6.78	4.890	4.282	64.227	64.23	
0.004	0.25	15	0.004	0.25	15	0.583	0.569	6.37	6.13	3.714	3.488	52.320	116.55	
0.008	0.5	30	0.008	0.5	30	0.555	0.569	5.89	5.66	3.269	3.218	96.531	213.08	
etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	



With the data shown (indicated by arrows) produce the graph above.

Note: Total Energy in the graph means Running Total Energy

[illegible]

To Graph the Data

1. Choose the Insert tab
2. Choose the Scatter button then Scatter with smooth lines and markers.
3. Move graph under data
4. Under Design Tab – Select Data
5. The Select Data Source dialog box appears
6. Choose ADD button on left side.
7. Edit series dialog appears
8. Fill in series name – Voltage
9. Choose series X values ← choose all the numbers in Time, t, min.
10. Choose Series Y values ← must be empty to begin with
11. Choose all the numbers in Inst. Potential
12. OK
13. Repeat Step 6-11 for Inst. Current and Total Running Energy (Time, t, min as X values)
14. OK

To make secondary axis and Add Labels (Graph is chosen)

1. Right click on Total Energy graph line and choose Format Data Series. Format Data Series dialog box appears, choose Secondary Axis.
2. Under Layout Tab – Choose appropriate CHART TITLE and AXIS TITLE

To Print Excel All on One Page

1. Select all the data on the graph
2. Under Page Layout Tab choose Print Area – Set Print Area
3. Page Setup – Portrait – Fit to 1 Page

Above Headings

Mark

Title~ Battery Test	1	
Name~ First and last name	1	
Course Name and Section	1	

Headings

Words Centered	1	
Words Underlined	1	
Symbol~ 6	1	
Formulas	1	

Data Table

Time hours	1	
Time seconds	1	
Time interval hours	1	
Time interval seconds	1	
Avg. Potential	1	
Avg. Current	1	
Inst. Power	1	
Average Power	1	
Total Energy	1	
Running Total Energy	1	
Decimal places	2	

Graph

3 graph lines	3	
Chart Title	1	
Primary horizontal axis labelled as shown	1	
Primary vertical axis labelled as shown	1	
Secondary vertical axis labelled as shown	1	
Legend	1	
Make secondary vertical axis on graph	1	

Formulas

Time hours	1	
Time seconds	1	
Time interval hours	1	
Time interval seconds	1	
Avg. Potential	1	
Avg. Current	1	
Inst. Power	1	
Average Power	1	
Total Energy	1	
Running Total Energy	1	

Printing

Grid shows on printed sheet	1	
Headings,data and formulas and graph on one sheet, portrait	1	
Formula Page printed in Landscape	1	
Spacing for cells when printed	1	
Handed into box #12 in room T3010	1	
Handed into electronic dropbox Lab #3	1	
Time and Date Stamped and Stapled	1	

Total

45