

## Bryon's Handy Homework Hints

Bryon, a Rose alumnus, was an experienced grader for the sophomore engineering curriculum. He compiled this guide as a list of things to watch out for when doing your homework so you don't lose points for silly mistakes or omissions. You shouldn't have to lose these points! So watch out for the following common errors. And remember, overall,

*Your homework is graded primarily on the work shown, not on your answers!*

It is much better to have a wrong answer that follows logically from your work than a correct answer that magically appears but does not follow from your work.

### Cover Page

This is the worst place for me to have to deduct points. All of the following errors are easily avoided. Please place your name and box number in the upper right hand corner, making it easier for me to record your grades and put the HW sets in order for distribution through campus mail.

<i>Error</i>	<i>Points Lost</i>
No cover page	10
No staple	5
No name or box	5 each
<i>Total</i>	<i>maximum of 50% of the total HW score</i>

### Computer Printouts

If you don't show me your computer work, I have to assume that it doesn't exist. Thus, to get credit for work done in a computer program, make a printout, tape it in place in the solution development, and explicitly write down the useful results from the printout.

<i>Error:</i>	<i>Points Lost</i>
Printout not included	varies (mostly between 2 and 7)
Axes not labeled (graph)	1
Inappropriate scale (graph)	1
Section missing or unevaluated	1 to 3 depending on severity

### Show your work

Answers are on the web for checking your work. If a correct answer magically appears out of nowhere with no supporting work, **I take off points for "does not follow."** Conversely, if you make a small sign error somewhere and it throws off your equations but you report your wrong answer, **I will not take off any points for the wrong answer.** What this means is, if two people make the same mistake and one reports their incorrect answer and one reports the correct answer from the web, **the person with the incorrect answer gets more points.** You are required to show **all** your work for full credit.

**Here's a generic approach for solving a problem.**

1. Write a complete Known, Given and Find. This should include any assumptions given in the problem. It is perfectly acceptable to cut and tape a problem description given in class to the paper, but don't just staple the entire handouts in with your homework and expect that to count.
2. State all assumptions and look-up values. State where look-up values came from (ex.  $C_{v,air}=1.56\text{KJ/K}\cdot\text{kg}$  from Table 5.1 in *Title of Source*). If several values are from the same source, you can write "The following values are from *Title of Source*."
3. State all equations used in their most general form before applying assumptions and simplifying. You are not required to re-derive equations from class, but you are required to state a general form before assuming things are steady state, zero, or some other simplifying expression.
4. Solve all problems as far as possible symbolically before substituting numbers. The expression does not have to be solved explicitly for the unknown variable or variables as long as there is nothing involved in the expression that can not be solved simply on a calculator. As an example either of the following solutions for  $Q$  are acceptable:  
$$\Delta U = Q + W \Rightarrow 32W = Q + (-20W) \Rightarrow Q = 52W$$
$$\Delta U - W = Q \Rightarrow 32W - (-20W) = Q = 52W$$
5. Substitute numbers as a last step. This is necessary so that if you have a correct symbolic expression for a variable but the wrong answer I can find why you have the wrong answer.
6. Show all units. Show all units. Show all units. Every time you write a number down you should have the units for it shown, especially when it is in an equation. This will actually help you because I am constantly having to take off points for people not realizing that they have to convert units. If the units are in the equation and don't cancel it will remind you that you have to convert something.
7. Show all conversions. If you have to convert units show the original value, the conversion factor(s) used and the converted value with all units shown.
8. Be careful of sign errors. For practicing engineers, sign errors can be disastrous.

*Error:*

Units not shown  
Conversions not shown  
Symbolic equations not present  
Plugged in numbers not shown  
Basic equation not shown  
Looked up values not stated  
Known, Given, Find missing

*Points lost:*

1  
1  
1 to 2 depending on severity  
1 to 2 depending on severity  
1 to 4 depending on severity  
1 to 2 depending on severity  
1 each