INSTRUCTIONS FOR DOING YOUR HOMEWORK (Version 1)

Vlasios Vasileiou (Vlasisva@umd.edu) 09/22/2003

MAJOR:

1. **Staple** your papers together.

2. **Box your final answers** and **separate** your problems by leaving 1-2 lines space.

3. **Turn in neat homework:**

   a. Each step should be at the bottom of the other**. No zigzagging**.

   b. Don't skip parts of calculations. Ex.

$$\frac{dx}{dt} = 5 \Leftrightarrow dx = 5dt \Leftrightarrow \int dx = \int 5dt \Leftrightarrow x = 5t + x_0$$

   is better than

$$\frac{dx}{dt} = 5 \Leftrightarrow x = 5t + x_0$$

   c. Always try to "name" your equations that you will use again in your solution Ex.

$$X = U_0 \cdot Cos(p/2) \quad (1)$$

.

.

from (5) we find that t=50sec

so $\xrightarrow{(1)(5)} X = 50 \cdot UoCos(p/2)$

   d. **Explicitly clarify WHAT you are trying to find at each major step of your solution (at the key points) and HOW you are going to find that**. Ex. "We will find the maximum height of the electron by solving eq (1) for Uy and then by substituting Uy=0."

   The algebra and calculations will be ***below*** the explanation.

   f. Either use a sharpened pencil and eraser or a pen (I prefer pen) and correction fluid. **Try not to make many smudges** and particularly in the middle of equations! If there are large parts of an exercise that need to be removed, you can just cross them out.

4. **ALWAYS write out your solutions in algebraic form BEFORE** you substitute in numerical values.

5. **ALWAYS write the appropriate units after your solutions**. In order to check whether a solution is correct, you may substitute the *units* along the numerical values in the algebraic form. Then by doing the calculations *with* units, your final result should have the appropriate unit. Else, you have made a mistake! Simple Example:

$$\vec{F} = m \cdot \vec{a} = 5Kg \cdot 10\left(m/\sec^2\right) \cdot \hat{i} = 50\left(Kg\ m/\sec^2\right) \cdot \hat{i}$$

This can be applied to more complex equations where units can be cancelled out, like at the nominator and denominator of a fraction.

6. **Draw a picture for every problem** (where appropriate), defining your coordinate system, your unit vectors along each coordinate axis ($\hat{i}, \hat{j}, \hat{k}$ for Cartesian, etc.), the vectors of forces (where needed) and all of the angles you may use.

7. **Consider whether your answers make "sense"** by checking units, sign etc. (Ex. Negative time in kg can cost you most (if not all) of the points of an exercise!)

MINOR:

1. Try to use vectors. It is more appropriate to say $\vec{F} = m \cdot \vec{a} = 5\left(kg \cdot m/\sec^2\right)\hat{j}$ instead of saying that $\vec{F} = 5\left(kg \cdot m/\sec^2\right)$upwards. If you calculate the length of a vector (ex. the value of speed), you should always write your final result in vector form, thus defining the direction. Ex.

Ux=ds/dt=500m/25sec=20m/sec

so $\vec{Ux} = 20\left(m/\sec\right) \cdot \hat{i}$

2. Try to use vectors correctly. $\vec{F} = m \cdot a$ is wrong because LHS is a vector and RHS is a scalar. So try to use only scalars (i.e. the lengths of your vectors) or only vectors in an equation.

Comments:

1. I won't subtract points for numerical mistakes in your calculations. However if your final result doesn't make sense, I will subtract points for that. Also, if you make a lot of mistakes in calculations I will eventually subtract some points.

2. Try to send me an email (vlasisva@umd.edu) before coming for questions to my office. That way we can arrange for a meeting outside my office hours (if you want) and I will probably answer your questions in a better and faster way.

3. This long list of instructions will be revised in the future. So keep checking. (There is a version number on the top).