Homework Procedures

Format and Notes on Grading:

I will grade each problem as thoroughly as possible within the limited time I have. Full credit for each problem is 10 points. Homework format is given on the next page and rough guidelines on how I will deduct points are given below. Please use your best judgment and be consistent. I will not grade any assignment that is not legible.

Basic Format Deductions:

- No assumptions - 1 point
- No schematic (where necessary) - 2 points
- No units - 2 points
- Inappropriate significant digits - 1 point
- Wrong sign in final answer - 1 point

Analysis Deductions: arranged from more significant (-3 points) to less significant (-1 point)

- Incorrect governing equations, assumptions, and/or system schematic
- Fundamental mathematical errors (integration, differentiation, fractions, etc.)
- Incorrect unit analysis (such as for “pound-mass” and “slug” unit systems)
- Simple mathematical errors such as:
  - Failure to convert degrees to radians in trigonometry calculations
  - Failure to convert RPM to radians/sec
  - Incorrect property values due to using wrong conditions, interpolation errors, or misreading the table column heading “x × 10^3” as “multiply value of x by 10^3” (you should read it as “divide value of x by 10^3”)
  - Calculation or typographical errors
Homework Format

1. Write name and homework number on top of the paper.
2. Present the problem and solution using the following sections: Given (in your own words), Find, Assumptions, Schematic (if necessary), and Analysis.
4. Be neat, write legibly, and use a straight edge for drawings and graphs.
5. Describe steps and include notation where necessary.
6. Start with basic forms of equations and then simplify.
7. Always include units and conversions.
8. Retain an extra significant digit for intermediate calculations and then round to the appropriate number (usually three significant figures) for the final answer.

Example:

Last Name, First Name               ME 341-01  HW #1

Example Problem #1

Given: Object of known mass, subjected to an applied upward force, is accelerating upwards.

\[ m = \text{mass} = 3.00 \, \text{kg} \]
\[ a = \text{net acceleration} = 7.00 \, \text{m/s}^2 \]
\[ g = \text{acceleration of gravity} = 9.81 \, \text{m/s}^2 \]

Find: \( F_a = \) magnitude of applied force, in N

Assumptions: Point mass with only the given applied forces

Analysis:

Newton’s 2\textsuperscript{nd} Law applied in the vertical \( z \)-direction:

\[ \sum F_z = m \, a \]
\[ F_a - F_{\text{gravity}} = m \, a \quad \text{where} \quad F_{\text{gravity}} = \text{force due to gravity} = m \, g \]
\[ F_a = m(a + g) \]
\[ F_a = 3.00 \, \text{kg} \times (7.00 + 9.81) \, \text{m/s}^2 \]
\[ F_a = 50.4 \, \text{N} \] (Note: use 3 significant digits to match original data!)