Announcements

- The last few slides of oral presentation PPT have ideas about what to put in your slides
- Testing this week – starting tomorrow
- Open Lab today – 12:30 – 5:45
  - Lab will be available for you and your team to finish your towers
Tips for Great Written Reports

ENGR 10
October 7, 2013
Technical Writing is Everywhere

- **Annual Report**: 12-month summary and evaluation of finances and activities

- **Environmental Impact Report (EIR)**

- **Feasibility Study**: consequences of possible actions

- **Final Report**: results of completed work
• **Lab Report**: results of experiments, procedures

• **Incident Report**: description of injury or hazardous material spill

• **Justification Report**: explanation for actions taken

• **Maintenance Report**: product repair and service record for a given period

• **Meeting Minutes**
• **Personnel Report**: evaluation of an employee's work

• **Preliminary Report**: task analysis

• **Progress Report**: work accomplished to date

• **Research Report**: summary of research completed

• **Sales Report**: sales figures for a given period

• **Trip Report**: expenses and activities
ENGR 10 Reports

Solar Cell (or water) Laboratory Report

Wind Turbine Design and Performance

Robot Design and Performance
Goal of your reports

- Reader could replicate what you did without having to talk with you in person
- Synthesize and summarize what you have learned
  - An important part of the learning process
Getting Started Writing or Speaking

- Determine your **purpose**
  What’s my purpose?

- Determine your **audience**
  Who is my audience?
What is my purpose?

• Informative
• Persuasive
• Analysis
• Instructional
Who is my audience?

- Business
- Technical
- General Public
- Age Group
- Gender
- Culture
Write to your Audience

Aim a report you write in this class toward a fellow engineering student.

Provide enough detail so that an engineering student who hasn’t take ENGR 10 could replicate what you have done.
Parts of a Report

• Title Page
• **Summary/Abstract/ Executive Summary**
• Table Of Contents
• Introduction
• Theory
• Experimental Set up OR Design Procedure
• Results
• Conclusions
• References
• Appendix
Summary

• This section goes after the title page but before the table of contents

• Designed for the busy person

• Succinctly introduce project (what it is, what you did)

• Summarize key results (performance data)

• Summarize what you learned
Clicker question

Which might be a good first sentence of your summary?

a. In the beginning the whole group sat at a computer station and brainstormed ideas about the design of our turbine blades.

b. The purpose of the project was to construct and model a wind turbine by designing our own blade to harness the maximum wind power and a lightweight support structure, stiff enough to resist deflection.

c. First we used the glue to attach PVC pipe to the standard wood base that we were given.
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Use Equations

• Instead of a sentence like this:
  The factors of the power include voltage (volts), which is equal to the current (amperes) multiplied by the resistance.
  
  Just write:

  Power (watts) is calculated using the following equation:

  \[ P = V \times I \]  
  (Eq. 1)

  where \( V \) is voltage (volts) and \( I \) is current (amperes).
Use pictures/sketches

• Here is the description from a report:

We took a geometric view on the matter and decided to construct a 90 degree angle using simply two sets of wooden beams after measuring the angles of each beam. We set them parallel to one another to maximize the strength of our design.

• Can you figure out what the structure looked like?
Using Figures to Clarify

As shown in Figure 1, the support structure consisted of a right triangle made of two wood pieces to provide stiffness in the direction of the wind. In addition, two small triangular elements were installed at the base in the perpendicular direction to resist potential loads from the side and minimize oscillation.

Figure 1: Turbine support structure provides resistance to loads in two perpendicular directions.
Use Headings and Subheadings

3. Design and Construction
Blah blah blah

3.1 Turbine Blade Design
Blah blah blah

3.2 Support Structure Design
Blah blah blah

3.3 Construction sequence
Blah blah blah
Results

• Include tables of key data and graphs of key results
• This section MUST include text to describe what is in each of the tables.
### Table 1: Displacement Data for Turbine Support Tower

<table>
<thead>
<tr>
<th>Applied Mass $m$ (gm)</th>
<th>Applied Weight $W = \frac{m \times g}{1000}$ (N)</th>
<th>Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.196</td>
<td>0.02</td>
</tr>
<tr>
<td>100</td>
<td>0.98</td>
<td>0.09</td>
</tr>
<tr>
<td>500</td>
<td>4.9</td>
<td>0.51</td>
</tr>
<tr>
<td>1000</td>
<td>9.8</td>
<td>1.58</td>
</tr>
</tbody>
</table>

Figure 1: Displacement Data for Turbine Support Tower

Note Title

Location

Incorrect
Clicker Question-
What does this results graph represent?

a. I have no idea
b. Voltage vs. current
c. Voltage vs. power
d. Current vs. power
e. Power vs. blade speed
Can you figure it out now?

Turbine Power versus Voltage at Wind Speed of 20 mph

Figure 1: Turbine power generally decreased with increased voltage. The circled voltage readings are suspect.
What is wrong with this stiffness graph?

a. Nothing

b. Load and displacement axes are reversed

c. Load is in kg

d. Scale on x-axis is not proportional to values

e. b, c, and d
The same data plotted correctly
Be Concise – Eliminate Unnecessary Words

• Wordy:
  – In the graph that shows load against displacement (Figure 1) displays the stiffness of the structure where the displacement increases as the load increases. The stiffness that we got from our project is 6.08 N/mm.

• Concise
  – The calculated stiffness was 6.08 N/mm, which is slope of the linear relationship between load and displacement in Figure 1.
State Your **Reasoning**

- **No clear reason**
  - We decided to create a three blade rotor because we believed this would give us the best possible results.

- **Clear reason**
  - We decided to create a three blade rotor because a three blade configuration is the most stable (Jones, 2008).
Write in the **Third Person**

**Instead of**
- We found
- Our choice of …
- When plotted, we see that
- We used a 75 W lamp as the source
- Our tasks were to…
- In this lab we derived…

**Try**
- Results indicated
- The choice of …
- Plots of the data show
- A 75 W lamp served as the source
- Tasks included …
- The purpose of this lab was to derive …
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Reference List

• APA Style
• Alphabetize by author
• If there is no author, use title to alphabetize

Examples


According to Betz’ Law, only 59% of the kinetic energy in the wind can be converted to mechanical energy using a wind turbine (“Betz’,” 2003).

Reference List

Pitfalls to Avoid

• Extremely Long Paragraphs
  – A paragraph that is one page long is likely too long
    • Identify the main points you are trying to make
    • Use the main points as topic sentences
    • Use three or four sentences in paragraph to build on topic sentence.

• One sentence paragraphs
  – You can not fully develop an idea in one sentence
I have a spelling checker.  
It came with my PC.  
It plainly marks four my revue mistakes I cannot see.  
I’ve run this poem threw it.  
I’m sure your please too no.  
Its letter perfect in its weigh—  
My checker tolled me sew.
Aocdrnig to a rscheearch sduty at an Elingsh uinervtisy, it deosn’t mttae in what order the ltteers in a word are, the only iprmoetnt thing is that the frist and lsat ltteer is at the rghit pclae. The rset can be a total mses and you can still raed it wouthit a porbelm. This is bcuseae we do not raed ervey lteter by it slef but the word as a wlohe.
Good, Solid Tech Writing Helps You:

- Earn better grades
- Get the job you want
- Receive promotions
- Communicate for a safer world